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EGSA

Raising the Bar

The Heights of Customer Service

Convention Recap

Savannah Hosts EGSA Spring Meeting

Wireless Telecommunications

The New, Dynamic Revolution

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The Role it Plays in On-Site Power

EGSA News

- *Members Honored for Outstanding Service*

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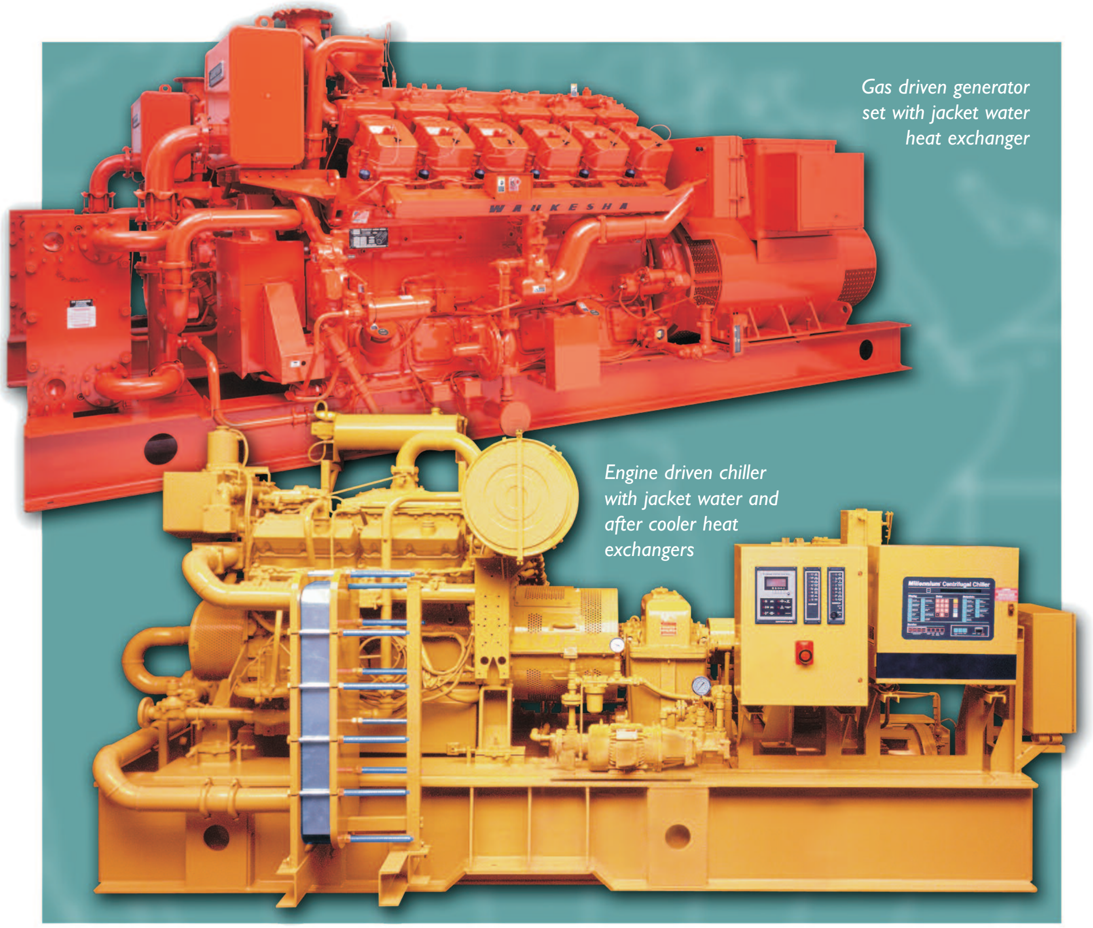

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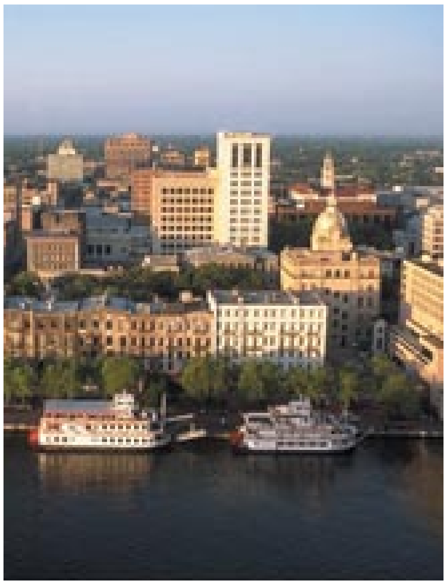

On the Cover: Savannah, GA played host to the 2007 EGSA Annual Spring Convention. Page 14.

Chris Hart discusses his customer service philosophy. Page 18.

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EVENTS CALENDAR

Conferences

EGSA 2007 Fall Technical & Marketing Conference

September 16-18, 2007; Maui, HI

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EGSA 2008 Annual Spring Convention

March 16-18, 2008; Santa Ana Pueblo, NM

The Association's Annual Convention of Members. Speakers will cover business and technical aspects of On-Site Power Generation and current industry trends. For additional information, visit *www.EGSA.org* or call (561) 750-5575.

Schools

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POWER-GEN Asia 2007

September 4-6, 2007; Bangkok, Thailand

Recently combined with China Power, this event is one of Asia's biggest power generation shows. For information, visit *www.powergenasia.com.*

Vietnam Electricity Expo 2007

December 5-7, 2007; Hanoi, Vietnam

Fully supported by the Vietnamese Ministry of Industry and Electricity and held in rotation with Hochiminh City since 1992, focusing on small to midsize thermo and hydroelectric projects. For information, visit *www.cpexhibition.com.*

EGSA Members: List your meetings here; fax your information to (561) 395-8557.

Look for more industry events in our up-to-date calendar on the web at *www.EGSA.org*

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Gary Kidwell
2007 EGSA President

Healthcare Dynamics: Power to the Patients!

After writing my previous column on data center growth it occurred to me that the need to manage high volumes of data penetrates into nearly every type of organization. It's like water into a sponge that can't be saturated. Brokerages and banks are obvious, of course. Less obvious are hospitals.

There's been a veritable explosion of IT in healthcare. For good reason. Eighty-three million baby boomers are approaching retirement age. How many of us are among them? As many boomers begin leaning more heavily on the healthcare system, they'll find the system is aging like them.

The healthcare industry is rejuvenating itself, however, to handle the load—both the number of patients and the power to serve them. It's a prescription for success for companies in the electrical generating systems business.

How hospitals—and power systems manufacturers—are responding to the growing need for more power was the topic of discussion at a roundtable sponsored by ASCO with *Consulting-Specifying Engineer* magazine. The topic was emergency power in healthcare. If you're interested in the discussion, a report on the roundtable is in the March issue of *Pure Power* magazine.

A number of dynamics drive our business in the healthcare market. Consolidation is one. An increasingly digital environment that includes maintaining patient records and medical imaging is another.

The decision to rebuild or go "greenfield," managing future growth and meeting patient, physician and hospital staff expectations round out the list. Physician expectations can be especially high as many of the panelists said doctors fully expect that they will never see anything go down because of a power outage.

What's it all mean to us? More business. More loads and more cooling require more power. Hospital management wants to protect more and more revenue generators, such as MRIs, CATs and linear accelerators.

A number of roundtable panelists said NFPA, Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and Health Insurance Portability and Accountability Act (HIPPA) are encouraging hospitals to cover more of their loads with emergency power. The JCAHO Sentinel Event Alert 37, for example, effectively raises the bar for all healthcare facilities. It urges them to consider not just what the codes require, but to go beyond that and look at what's needed for effective operation.

One reason is improved patient care. But from the physician's standpoint, it's liability. The engineering manager of one of the hospitals represented at the table said the hospital put both of its Cath labs on UPSs, as well as on emergency power. He said the hospital looks at the code as the minimum requirement and exceeds it by 100 percent.

Another reason more equipment is put on emergency power is sustained power outages. A sustained outage quickly makes air conditioning, kitchen services and sterilizing equipment "must add" loads to emergency power. Additionally, moving to interventional rooms requires imaging equipment for surgery. Covering that equipment with emergency power is no longer a cost issue; it's a real patient safety issue.

Electric utilities, too, are auguring for more emergency hospital power. They want hospitals to shed loads from the utility source during times of peak power demand. Some hospitals in the midwest are taking a different approach to satisfying the demand for more power. They're building aggregated power facilities with enough capacity to meet their growing power requirements into the future.

Centralized energy designs typically have redundancy on both the utility and the emergency side. Some designs are 2N systems, rather than N+1 or N+2.

Panelists also see the demand for medium voltage power systems growing. If this trend takes off, it will have a substantial impact on the product mix we offer.

Ever growing emergency power systems and shrinking engineering and maintenance staffs require more remote monitoring to efficiently track and control power system operation. Web-based command and control monitoring advises short-handed staffs immediately when issues arise.

All this business won't come spilling over the transom. Much of it will be hard earned. Our traditional customers in engineering and facility management need more than ever to convince C-level executives of the cost/risk/benefit ratios of various emergency power designs.

Talking to C-level execs requires a much different language than what we use with engineering and facility management. Terms like ROI, net present value and shareholder value need to be part of the equation when we talk about the value of avoiding downtime for hospitals.

Facility directors need to be conversant in that language and need to be able to argue effectively for their infrastructure needs. The use of simple payback is out the window.

That's why we call our equipment a capital **investment**. It's an investment in patient care, capable physicians and an experienced staff. ■

George Rowley
EGSA Director
of Education

Certification Program Update

As of March 31, 53 technicians have earned the right to use the title "EGSA Certified Electrical Generating Systems Technician." More significant is the number of techs (248) that have purchased the certification test Study Guide and are preparing to take the test. Passing the certification test is a true measure of a tech's knowledge, skill, and proficiency. Employing Certified Technicians adds credibility to the employers' commitments to high standards and proficiency, and to meeting the needs and expectations of customers.

Interest in the program is strong and increasing–we have responded to many inquiries about this important program from techs and their employers from across the United States, Canada, Mexico, the Caribbean, and Central and South America.

Certified Technician Logo Items–In addition to our uniform patch, Certified Techs will soon be able to order baseball caps and decals adorned with the EGSA Certified Technician logo. The logo items proclaim that the wearer is an "EGSA Certified Electrical Generator Systems Technician." Watch for announcements. Order forms will be available in *Powerline* and on our web site soon.

- Our highly detailed sew-on uniform patches contain over 15,000 stitches to highlight our copyrighted genset logo.
- Decals will be available in two sizes (4"x6" and 8"x10") for use on service vehicle windows and body panels, toolboxes, etc. These heavy-duty adhesive-backed vinyl decals are made to hold up to exposure to the elements. To help resist fading and weathering, the images are printed with UV resistant ink and we have applied an extra gloss coating to further protect the image from fading and abrasion.
- Our distinctive EGSA blue caps with white brim stripe, button, and vents feature the EGSA Certified Electrical Generator Systems Technician logo prominently displayed up front. The one-size-fits all caps are made of durable high-quality cotton and feature a flex-strap to adjust the size.

Are your techs preparing to take the test and earn the right to wear the patch? Find extensive information about this new and important program on our web site *www.EGSA.org*. If you have questions or need additional information contact George Rowley by e-mail at *G.Rowley@EGSA.org*.

Education Committee

Your Education committee and its many active members and volunteers continue to make progress on improvements to EGSA education programs.

New Two-Tiered On-Site Power Generation School–We plan to introduce a two-tiered school format in 2008. In terms of general guidelines, the "Basic" school will meet the needs of personnel working in non-technical positions (e.g., Sales/Marketing, Administrative/Management) and for those with less than three years experience working in the industry. The "Advanced" school will meet the needs of those who have attended the current or Basic On-Site Power Generation School, personnel employed in Engineering, Project Management, or Service positions, and those with over three years experience working in the industry.

Instructors are now preparing descriptions and learning outcomes for their modules and will soon prepare CEU test items and begin to build PowerPoint® presentations. Information about the school will be widely distributed as the plan for its implementation matures.

Revision of the On-Site Power Generation Reference Book

Much progress has been made to prepare for the revision of the *On-site Power Generation: A Reference Book*. A select committee consisting of nine members met in February to plan development of the book. Three members of the Certification Program DACUM Panel attended, and their contributions should make the revised book even more valuable to technicians. In addition to making preliminary decisions about content and format, the committee made decisions regarding the outline for the book and developed guidelines for authors. The results of the committee's efforts were presented to the Education Committee and Book Committees at their March meetings and are now in an approval process. We anticipate that a "Call for Authors and Reviewers" will be distributed within the next several months.

Please contact George Rowley at *G.Rowley@EGSA.org* if you need information about any of EGSA's education programs. ■

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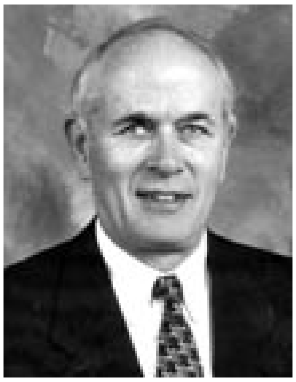

Herb Whittall
EGSA Technical Advisor

The Rise of "SMARTcodes"

In the January 2007 Building Safety Bulletin issued by the ICC (International Code Council) there is an article about a program called *"buildingSMART"*. In theory, it is a step forward in permitting for buildings in that they will be reviewed by computer programs and should allow the time between applying for a building permit and the issuance to be reduced considerably. This would be a great help to builders in Indian River County where I live. However, for those of you having problems with Fire Inspectors using the *International Fire Code* (IFC) requiring expensive changes to the package generator sets breathers and fuel tank filler system it could add to the problem. It also could cause areas not encountering the IFC now to have a problem in the future. Why? Because *buildingSMART* will be using "*SMARTcodes*" and *SMARTcodes* are based on the *2006 International Building Code, International Fire Code, International Plumbing Code, International Mechanical Code* and *International Fuel Gas Code*—all codes issued by the ICC. Since these *SMARTcodes* will make the job of the entity issuing building permits easier and cheaper, they may become the law in areas not currently using ICC codes and therefore, introduce the IFC to more areas.

Pursuant to the International Fire Code (IFC) with its requirement for a tall vent pipe, I received an email from UL concerning the fuel tank and quoting NFPA 30 *Flammable and Combustible Liquids Code*, Chapter 6.7. This requires a vent outside the building 24 inches from the building. However, it seems UL does not consider an enclosure a building so as long as the generator set is outside, the provisions of NFPA 30 should not apply.

Continuing with the IFC, the latest edition of the *ICC Building Safety Journal* says the IFC has been adopted in Massachusetts and that Georgia and Iowa have updated their codes to the 2006 IFC. Various other cities and towns have also adopted some of the ICC codes, but it does not tell me if the IFC code was adopted.

NFPA has instituted a new document notification system. They will email you when an ROP (Report on Proposals) or ROC (Report on Comments) is posted. To register go to *www.nfpa.org/codelist,* select the code you want, click on the "Alert Me" link and sign in for the email update.

I hope you all attended and learned a lot form the Spring Convention in Savannah. The presentations were full of interesting and useful information. The last presentation—*Wireless Telecommunications: The Digital Revolution*—was very interesting. Discussing where the digital revolution is going and what is going to be built by the Homeland Security Department in the way of relay stations, all of which will need generator sets.

California is requiring all small engines (under 50 horsepower) produced after January 1, 2007 to include catalytic converters in the exhaust system. This requirement is expected to reduce smog emissions from these engines by 40 percent and reduce overall emissions in California by 7 percent or the equivalent of 3 million cars. The Federal EPA gave California the authority to do this in December, 2006.

New York has released a pre-proposed draft of rules to implement the Northeast's Regional Greenhouse Gas Initiative (RGGI). The RGGI will place a regional cap on CO_2 emissions from fossil fuel electric power plants of 25 megawatts or more. The cap is 121 tons of CO_2 from 2009 to 2015 and then a 10 percent reduction by 2019. I am sure this means stricter emission regulations on diesel and gas powered generator sets in the New York, New Jersey and New England area in the very near future.

UL 2201 Issue 3 – *Outline of investigation for Portable Engine-Generator Assemblies* was published on March 2. I have a copy (92 pages). On page 77 is the latest diagram for a warning of CO poisoning to be put on these sets..

A very complete IEC document FDIS IEC 62402 ED 1.0 *Obsolescence Management – Application guide* closed final voting on April 15. EGSA voted for this document. In this document product includes such items as: capital equipment, Infrastructure, Consumer durables, consumables and software products. A second document 56/1186/NP *Management of Reviews in a Product's Life Cycle* EGSA voted against since it is very similar to IEC 61160 (2006-02) *Design Review*. The two need to be combined and not be two documents. ■

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EGSA Members Recognized for Service to the Industry

Several members of the Electrical Generating Systems Association (EGSA) were singled out at the recent EGSA Annual Spring Convention in Savannah, GA and recognized for outstanding contributions to EGSA and the entire On-Site Power industry.

2007 EGSA President Gary Kidwell presented Leo LeBlanc of Nixon Power Solutions with the William Timmler Award. The William Timmler Award is given annually to an individual EGSA member for outstanding work in chairing an EGSA committee. LeBlanc, who won the award in 1997 for chairing the Membership Committee, was recognized for his stewardship of the Association's Convention & Communications Committee, which develops content for the Association's Conference & Convention educational sessions and for the Association's bi-monthly publication *Powerline* magazine.

Mr. Kidwell also recognized Jack Rogers of FWMurphy with the Leroy H. Carpenter Award. The Leroy H. Carpenter award is given to an individual EGSA member for long and outstanding service to the Association. Rogers was recognized for his service to the Codes and Standards Committee, contributions to the 3rd and 4th editions of the On-Site Power Reference Book and, most recently, his service to the David Coren Scholarship Committee. Rogers has served EGSA as a Director, a member of the Executive Committee and as President in 1997.

Mr. Kidwell went on to recognize a select group of On-Site Power School Instructors whose hard work and commitment over the years have helped educate EGSA members and the On-Site Power industry. Recently, the EGSA Board of Directors established an Instructor Appreciation Program for the purpose of recognizing the contributions of instructors—and their employers—who have devoted significant time and effort to the school, and who have taught in the school for at least five years. Five instructors were recognized for their contribution as an EGSA school instructor for at least 10 years. They were:

- Jim Wright of Marathon Electric, 24 years of service;
- Herb Daugherty, retired from ASCO Power Technologies, 22 years of service;
- Roman Gawlowski of Detroit Diesel, 20 years of service;
- Ron Schroeder of ASCO Power Technologies, 13 years of service;
- Ed Kach of Caterpillar, 10 years of service.

Finally, Kidwell presented 2006 EGSA President Dale Slemp with a plaque and portrait recognizing "his dedication and service to the Association," said Kidwell. During Slemp's term as president, the Association launched the industry's first Generator Technician Certification Program.

Over 230 On-Site Power professionals attended the Convention, one of the highest numbers of attendees in five years. EGSA is an international trade association made up of over 500 companies throughout the United States and a dozen other countries. Headquartered in Boca Raton, FL it is the world's largest organization dedicated to On-Site Power generation. For more information, visit EGSA online at *www.EGSA.org* or call 561/750-5575. ■

Past EGSA President Dale Slemp (right) received a plaque and a portrait.

Leo LeBlanc of Nixon Power Solutions (left) received the 2007 Timmler Award.

Jack Rogers of FWMurphy (left) received the 2007 Carpenter Award.

EGSA President Gary Kidwell (right) received the President's plaque and gavel.

From left: Roman Gawlowski, Herb Daugherty and Jim Wright received instructor awards.

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Savannah Plays Host to EGSA 2007 Spring Convention

Above: 10 Past EGSA Presidents joined current EGSA President Gary Kidwell for a photo during the recent Annual Spring Convention in Savannah, GA. From left (standing)—Dale Slemp, Gary Kidwell, Steve Stoyanac, Roman Gawlowski, Ray Kacvinsky, John Winbery, Jack Rogers, Leo LeBlanc and Herb Daugherty. Seated—Jim Wright (left) and Martin Bever.

Photo Opposite: Attendance at this year's Spring Convention easily topped 200.

The Electrical Generating Systems Association (EGSA) recently held its 2007 Annual Spring Convention at the Westin Savannah Harbor Resort & Spa in historic Savannah, GA, March 18-20, 2007. Conference speakers and their topics were designed to be of interest to virtually every member of the On-Site Power Industry. Educational presentations included:

In his Opening Keynote "Moving Beyond Zero Defects—to Zero Trust Defects," Chris Hart, Ph.D., President of Spire Group, challenged his audience to re-cast the generation of customer trust from a secondary business activity into their companies' primary function. "Every day that goes by in which you have dissatisfied or less-than-satisfied customers," said Hart, "you are working hard to put yourself out of business."

"No matter what you make," stressed Hart, "your company is in business to product strong trust attitudes in (your) customers' minds." Trust defects, he explained, are anything that prevents a strong trust attitude from being formed or that damages an existing customer attitude. Like product defects, said Hart, trust defects must be identified and eliminated.

In "Landfill Gas-to-Energy Project Engine Emissions," David Heitz, Senior Engineer for GeoSyntec Consultants, discussed how improvements in internal combustion design have led to lower emissions and provided an overview of the standards currently being established to regulate emissions along with monitoring and testing requirements. Heitz also noted that the predominant driver for emission standards is often new source review (NSR) permitting requirements under the Clean Air Act. Currently, said Heitz, three different levels of control technology are required on existing, modified or new sources. Reasonably Available Control Technology (RACT) is required on existing sources in areas that do not meet national ambient air quality standards (i.e., non-attainment

areas). Best Available Control Technology (BACT) is required on major new or modified sources in clean areas (i.e., attainment areas). And Lowest Achievable Emission Rate (LAER) is required on major new or modified sources in non-attainment areas.

In "New Technologies & Applications for On-Site Power Generation," Larry Osgood, Distributed Generation Program Manager for the Propane Education & Research Council discussed how the U.S. propane industry has been conducting an extensive Research & Design program over the past five years using a variety of engine/generator and CHP systems. The Propane Council's R&D program, noted Osgood, is designed to invest in new technologies and to foster industry practices that will not only bring innovative products and services to market but improve the industry's productivity and provide greater value to customers.

As a fuel, noted Osgood, propane offers On-Site Power unique advantages, including easy transportation and storage. He also stressed the economic advantages of propane's use in rural and remote power generation applications. However, continuous fuel-generated power, said Osgood, is not cost effective for most prime power applications. Therefore, the Council has turned its attention to the creation of propane hybrid renewable power systems that combine two or more power sources to produce On-Site Power. The use of small renewable electrical power inputs—utilized in hybrid systems—range from solar photovoltaic panels to wind and/or water turbines. By augmenting such renewable power sources (each of which pose certain reliability issues) with a propane genset, solid On-Site Power performance can be achieved.

In his Luncheon Keynote "The Winds of Change," Will Miller, Ed.D., of Purdue University entertained his audience with his observations on the social environment of the workplace and its impact on productivity. Mr. Miller is a therapist and teacher at Purdue University where he lectures at the schools of Organizational Leadership, Management and Mass Communication and is one of the country's leading authorities on stress reduction and life balance. His presentation offers insight into the obstacles that keep us from living well, both personally and professionally.

In "The Modern Tug/Barge Unit - Power Requirements & Electrical Outfitting," Robert P. Hill, N.A., M.E., President, Ocean Tug & Barge Engineering Corp. discussed the growing electrical requirements of modern-day oceangoing tug/barge units resulting from the increased use of electrical equipment over traditional diesel-driven equipment. Electrical equipment, said Hill, is increasingly used for cargo pumping and bulk cargo unloading, process heat and fuel treatment in heavy-fuel tugs, and it is even used for propulsion. As a result, the ship's electrical plant is more important than it has ever been in ocean tug and barge design.

In a Panel Session on Project Management, panelists Aaron Tasin, Operations Manager for Nixon Energy Solutions, Jeff Lynch, Engineering Manager for Ring Power Corporation and Mark Andresen, Vice President Power Generation, Cummins Atlantic, LLC provided attendees with insight into the application of project management to On-Site Power Generation Equipment. The panel addressed a variety of topics ranging from the sales order process, submittals and equipment acquisition to build-up of equipment, packaging, delivery, start-up and closeout. Several items are key to successful project management, said the panel, including: mutual understanding between the supplier, contractor and owner of what is being supplied; clear bills of materials; effective communication between sales and project management; and a clear division of responsibilities.

The project manager's job, noted the panel, is to control the project and ensure that what was purchased is delivered. The project manager must keep the project on track, on budget and on time by controlling everything from cost, risk, quality and

communication to time, change, procurement and human resources.

The panel went on to discuss the variety of tools that currently exist to support the project manager, including flow charts, spreadsheets and custom software programs. Regardless of the tool used, said the panel, the basic process will be consistent and require the project manager to break down each stage of the project into smaller, more manageable tasks.

In "Wireless Telecommunications: A Dynamic Revolution," Marion C. Solomon, AIA, Director-Carrier Networks, Special Initiatives for General Dynamics discussed what's new with standby power applications and environmental design requirements for wireless telecommunications and related how to approach system design. Solomon gave attendees an overview of recent mergers and acquisitions within the telecommunications marketplace and demonstrated how the digital revolution is driving the demand for power quality.

Wireless telecommunications, noted Solomon, have greatly expanded over the past 20 years to create their own distinct needs for power reliability and network security. Public safety systems in support of police, fire and emergency personnel and other 911 services, for example, rely heavily on wireless telecommunications in the event of hurricanes, tornadoes, earthquakes and terrorist attacks. As a result, said Solomon, emergency power applications should and will be a significant part of future network designs.

EGSA Manufacturers Showcase

In addition to the lineup of educational sessions, the conference included EGSA's highly successful Manufacturers Showcase. The exhibition setting allows for a more formal dialogue between EGSA-member manufacturers, attending Distributor/Dealers and manufacturer representatives. Exhibiting companies were provided with a draped six-foot table which can be used to display literature, magazines and samples, etc.

EGSA will hold its Fall Technical & Marketing Conference September 16-18 in Maui, HI. Hotel information is posted on the EGSA web site at *www.EGSA.org*. ■

Editor's note: Convention session handouts are available to EGSA members on the EGSA web site. Articles highlighting Chris Hart's and Marion Solomon's presentations and the Project Management presentation are included in this issue of Powerline.

EGSA

Raising the Bar to Zero Trust Defects—in Customers' Attitudes

By Christopher W. Hart, Ph.D.

EGSA
Electrical Generating Systems Association
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EGSA
Raising the Bar Beyond Zero Defects

Christopher W. Hart, Ph.D., delivered the Opening Keynote at the 2007 EGSA Annual Spring Convention.

Peter Drucker once observed: "The customer is the foundation of a business and keeps it in existence. What the customer thinks he is buying, what he considers 'value' is decisive—it determines what a business is, what it produces and whether it will prosper."[1]

Business leaders understand this fundamental truth perfectly well. Providing customers with greater value than one's competitors do is the principle underlying our economic system. The "invisible hand" guides customers to buy from companies that offer the greatest value.

Business leaders also know that customers are posting millions of comments about their experiences on the Web. This creates a source of information that customers find far more trustworthy than paid advertisements, which come in dead last as a trusted communication source—making the invisible hand increasingly visible.

Companies keep score through profit, though, creating a serious disconnect with Drucker's ideas and the power of the invisible hand. For publicly traded companies, the financial markets' obsession with short-term earnings creates a filter through which every decision must pass. Miss analysts' earnings forecasts and the only question is how far the company's stock plummets the next day.

But what about the growing body of research showing customer satisfaction's positive effect on everything from sales and referrals to price sensitivity and stock price? Unfortunately, stock analysts lack concepts and tools for incorporating these relationships into their valuation models. How much is an increase of two percentage points in customers' "willingness-to-recommend" worth? How can it be represented in a valuation spreadsheet? Finance texts have yet to include chapters on this topic. Nor will they, so long as the SEC's and its international counterparts' rules include nothing about reporting customer-attitude information. The problem is that these rules have their roots in accounting principles that date to the 1930s.

Albert Einstein said, "Insanity is doing the same thing over and over again and expecting different results." Practically speaking, so long as stock analysts continue using information and techniques that hark back to the Depression, executives will have little choice but to play by the rules financial markets set. Rule number one is not to miss short-term earnings targets.

Playing the game by Wall Street's rules does not prevent company leaders from building their firms' competitive strength, however. This strength determines, to a large extent, how long they will be capable of hitting short-term earnings targets; a study done at a business-to-business Information Technology (IT) company shows as much.

The firm already had a customer satisfaction tracking system in place to monitor the perceptions of its competitors' customers and its own. The problem was tying survey-based information to financial performance. What customers *say* they will do on surveys often differs considerably from their actual purchasing behavior, making finance highly skeptical of any predictions based on survey information.

To get around this knotty issue, this firm's accounting department calculated the previous year's sales and gross profit margin for a sample of customers, which an outside party linked to their satisfaction scores. The research firm categorized customers who rated the company 9 or 10 on a 10-point scale as "trusting loyals" while those whose ratings were 7 or 8 were "satisfied." Ratings lower than 7 landed customers in the "dissatisfied" category. (This scheme jolted the client, which had always classified customers who rated it 7 or higher as "satisfied.")

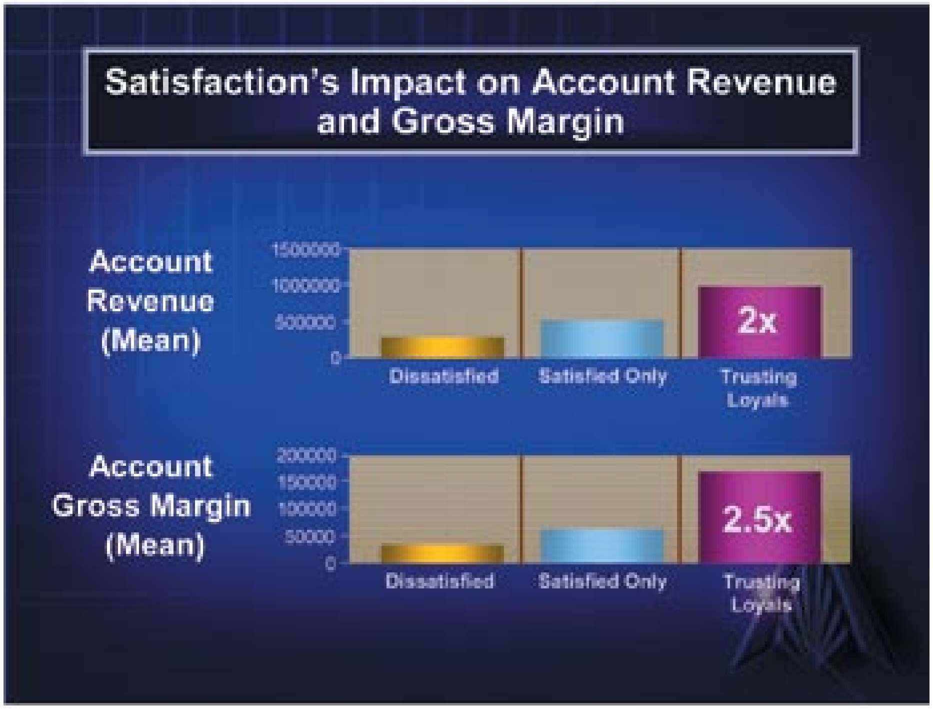
The results of the study were shocking!

Figure 1 shows that trusting loyals' average revenue was nearly 200% greater than that of customers who were merely satisfied. More stunning, trusting loyals' average gross margin was over 250% greater than satisfied customers'! And the gross margin figures didn't even include sources of increased revenue and lower costs that people in the company agreed were likely to occur as satisfaction increased.

After convincing themselves the numbers were solid, the firm's finance people quickly calculated that if the share of trusting loyals increased two percentage points per year, the company would exceed its revenue and earnings targets for the next three years—with no new customers!

The response was immediate, focusing on two questions:

1. What accounted for the dramatically greater value of trusting, loyal customers, and how had the company been unaware of this crucial point?
2. What would need to be done to increase the percentage of trusting loyals who, the company was amazed to learn, amounted to only 9% of its customer base?



Satisfaction's Impact on Account Revenue and Gross Margin

Figure 1

Idea for Action

Conduct a "trusting loyals" study, starting with a simple approach. Don't get bogged down designing the study: simplicity is the watchword for your first effort. If the relationship holds, ask senior managers three questions about possible sources of the profit boost:

1. Potential areas of reduced costs?
2. Potential sources of increased revenue?
3. Possible benefits from outstanding interpersonal service?

If nothing else, this exercise will jolt people's thinking. Immediately prioritize the ideas for subsequent analysis or, in some cases, immediate action.

Management quickly generated many possible reasons why trusting loyals were so much more profitable. Most were simple and uncontroversial, such as lower sales costs and less negotiation over service contracts terms. But few of these areas had received serious thought and even fewer had been analyzed from a financial perspective. Like stock analysts, the company's finance people had never been trained to analyze aspects of business rooted in customers' attitudes.

Further study showed that trying to increase the percentage of trusting loyals 2% per year would put the company in no danger of missing its earnings targets. Customers' top two complaints? Inconsistent service and salespeople who seemed more interested in making sales than in understanding customers' needs. A typical gem representing complaints about salespeople:

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"Pay attention when we talk to you instead of pursuing your own agenda." A similar jewel pertaining to inconsistent service: "Do you forget that you have a customer after the sale—or does it just seem that way?"

In short, the company, renowned for its outstanding product quality, was shooting itself in the foot in areas affecting customers outside of manufacturing.

At the issue's core was a simple truth: The company had never had any idea how much more trusting, loyal customers were worth. Does yours?

The Problem

Having shown these findings to managers from many companies and asking, "Do you think such a study of your customers would turn up similar results?" The only response has been a chorus of nodding heads.

What ***is*** the problem? The answer starts with the question: How many times do you hear, "Product quality is really bad these days?" Never. But how many times have you seen a person telling a bad-service horror story create a horror-story contest?

"You think that was bad? Let me tell you about what my cellular phone company did to me when I called about an error on my bill!"

Within a split second of the story's end, a third person lets loose: "I hate to say I've got you beat, but you won't believe what happened to me when I tried to get service for my new computer!"

Today, product quality is so good that it's all but a given. Service quality, on the other hand, while sometimes outstanding, is often inconsistent or downright terrible, as each of us knows all too well.

Research supporting people's personal experience abounds. For example, an annual survey conducted by the Customer Care Alliance has shown a constant downward trend in customers' satisfaction with post-sale service. Even more telling, the percentage of customers who report feeling *enraged* about their treatment has steadily increased.

Some claim these trends have more to do with customers' rising expectations than with the actual quality of service rendered. This may be true to some extent, but customer rage has little to do with elevated expectations. Rather, it's the result of service systems and people that fail customers in ways they perceive as highly personal ("*im*personal" is more apt).

At the same time, company after company is proclaiming that it will differentiate on service, based on research showing unmet needs for consistently high service quality. Yet how many companies can you think of that unfailingly provide outstanding service or, if they slip up, do an excellent job of dealing with the problem and take every possible step to prevent it from reoccurring? Lists typically include the "usual suspects"—Starbucks, Nordstrom, Disney, Lexus, Southwest Airlines and similar firms held forth as service paragons. Rarely, however, do people talk about companies that have dramatically improved their service over, say, the last five years—for good reason. Based on evidence from the American Customer Satisfaction Index (ACSI), such companies are rare.

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Service Paradox": How can companies that produce defect-free products fail to achieve anything close to defect-free service when customers could not be sending clearer signals of their displeasure?

Their failure is not for lack of trying. Firms invest enormous resources in unending efforts to "crack the service nut" through one initiative after another. Great stuff, except for one thing: Why has there been no Renaissance in service quality like there has been in product quality?

When existing explanations prove inadequate, a clarion call sounds for new thinking.

Perils of Conventional Wisdom about Service

Traditional thinking stresses the differences between services and products that create serious obstacles to producing consistently outstanding service. Here are the big three. First, service is intangible, giving customers little to examine before purchasing or take back when a problem occurs. Second, service production and consumption are often simultaneous, making errors visible to customers, not hidden behind factory walls. Finally, no two customers are the same, creating input variability unseen in a factory.

These distinctions are valid—but conventional wisdom about their impact on quality is off the mark.

In no way should intangibility prevent firms from providing top-notch service. Nor is simultaneity of production and consumption a reasonable excuse. As just-in-time manufacturing showed in factories, when companies *have* to do it right the first time or suffer the consequences, they do it right the first time! There's no question that customer-induced variability is tough to deal with—but how often do you get poor service in an upscale restaurant or high-end hotel? When employees know that expert customers are scrutinizing their performance, and especially when their compensation depends on understanding and meeting customers' needs, they realize that impossible-to-predict acts of God don't mean that their customers' satisfaction is in God's hands.

The core problem is not intangibility, simultaneous production and consumption, customer-induced variability or any of the many other factors often cited as the causes of (and justification for) poor service. The problem is stunningly simple: When poor service causes problems for customers, the direct cost to the offending firms usually is minimal. Instead, customers must bear their brunt, as all of us who have gone through service hell know too well. What "unabsorbed costs" do you bear when, for example, your car isn't fixed right the first time and you have to endure the pain involved in taking it in again? Or how about when you file a claim with your insurance company, whose marketing messages drip with trust, and run a gauntlet seemingly designed to grind you down, not to help you in your time of need?

If companies had to cover even a portion the costs they force customers to bear, what would be the effect on service quality? Exactly what happened in factories when companies realized how much defects were costing them: They identified and eliminated their causes, often creating ripple-effect improvements that showed the original defects were only the tip of the failure-cost iceberg. Absent painful financial consequences, insufficient incentive exists for companies to make comprehensive improvements that will create systems capable of producing consistently outstanding service. Compounding the problem, the study of trusting loyals shows that companies typically have no idea of the increased revenue and reduced costs improved service would yield.

Satisfaction, Delight, Retention, Loyalty, Trust: What's the Story?

Results from a growing body of research illuminate the links between customer satisfaction, financial results and, in a recent ground-breaking study, share price.[2] But is the pursuit of incremental increases in customer satisfaction capable of inspiring an organization's people? Does it give them a heightened sense of purpose and ignite the internal fires that burn so much more brightly when people feel their efforts are in pursuit of a worthy ideal beyond making money?

Consider the definition of satisfaction: Fulfillment of a need or want; the quality or state of being satisfied.

How many employees will charge up the hill in the name of "fulfillment of a need or want" or "the quality or state of being satisfied?" Despite the importance of customer satisfaction, it is an overused, low-octane phrase that will not fire employees' imaginations and generate the momentum needed to turn a company into an elite service provider.

To ignite people's passion to serve customers, new phrases like "customer delight" have emerged. While customer delight connotes a sense of excitement and passion, can you seriously imagine your customers in a perpetual state of delight, beaming away endlessly about what they buy from your firm? Customer delight is a *transient, transaction-based* feeling, not a deep, long-term relationship.

"Retention" certainly gets at the "long-term" aspect—but retention alone isn't enough. Customers might only be sticking around because competitors that consistently offer better value—especially service—do not exist; they feel like they are prisoners. What do prisoners think about? **Escape!** If a competitor figures out how to give imprisoned customers what they want, like Commerce Bank and Wachovia have done in retail banking, they'll jump—and often take as much verbal revenge on the old company as they can along the way.

A better goal is "loyalty": The binding of a person (i.e. customer) to someone (i.e. your company) due to a feeling of fidelity.

Loyalty is what you want your customers to feel. The idea isn't a new one--but what does it take to create this feeling?

Put yourself in the customer's shoes. You can't foresee the future—but you predict it whenever you make a purchase, typically based on your previous experience or recommendations from others (the most trusted source of information). Loyalty to a company, therefore, is based on the trust it has built with you and others over time--by providing consistently outstanding experiences for the prices charged.

The definition of trust: Assured reliance on character, ability, strength, or truth; Placing confidence in another; Dependence, reliance on another keeping a promise.

Summarizing: Every company is in the business of producing trust attitudes, which are the foundation of customer loyalty.

How do you measure the trust your customers feel for your company? Consider asking them the question that I have found gets at the core of trust-based loyalty: "To what extent do you believe that [name of your company] always would act in your best interest?"

All this explains why enraged customers' threats to give competitors their business are toothless. I'm reminded of a pathetic comment made by a person at one company: "Look…it's not like we're worse than competitors!" How inspiring.

Customer Attitude Production

Cutting through the endless discussion of how services differ from products requires understanding a simple bit of logic: Every company is a production operation.

What is every company in business to produce? Positive customer attitudes that leave buyers with no reason to consider purchasing from other companies.

Restating Peter Drucker's observation, "The customer is the foundation of a business and keeps it in existence." As any entrepreneur knows, the starting point for a business is identifying a customer need and a solution for meeting it, at a price that provides an adequate return on investment. Otherwise, no economic justification exists for the company's existence.

Creating satisfied customers is not good enough. Satisfaction is a basic—the least customers should feel at the end of a transaction. An aspirational, visionary goal is to build trust relationships with customers that create almost impregnable barriers to competitors' sales and marketing efforts. *(See sidebar, "Satisfaction, Delight, Retention, Loyalty, Trust: What's the Story?)*

If the idea that your company is in the attitude production business is jarring, think about it this way: If you are in the widget-manufacturing business, you will give serious attention to *everything* that enables your factory to produce defect-free widgets. Likewise, if you view your company as in the attitude production business and expand the idea of "zero defects" to "zero trust defects," previously unrecognized, costly process problems will jump out of your process flow charts.

Trust Defects

Externally, a trust defect is anything that detracts from the trust a current or potential customer feels for your organization, your people and your products. Internally, a trust defect is anything that erodes trust among the people in your organization (and the companies in your supply chain).[3]

If you think the phrase "trust defect" is mere semantics—a buzzword replacement for "improvement opportunity" or, more prosaically, "problem"—think again. When I divide people into two groups and ask one to make a list of trust defects and the other to make a list of improvement opportunities, the results are startlingly different. Improvement opportunities usually are fairly general: "We should …." Trust defects tend to be specific and personal: "We shouldn't, but we do…!"

For example, the first internal trust defect identified by a group of people from a company's finance department was meetings that start late. You might think "So? That's life in a busy organization." This sense of inevitability—and inconsequence—makes the point. In short order, the group plumbed the depths of the late-meetings problem and created a diagram of interlinked costs and consequence that left them in shock! Within two hours, the CFO led the group to commit to identifying and eliminating the underlying causes of this seemingly trivial issue.

The example of an internal defect mirrors the ignorance of failure costs in fac-

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tories before people saw their operations through the lens of just-in-time (JIT). An enormous number of seemingly minor defects jumped out, which subsequent analysis showed were intolerable financial drains that had to be eliminated. And they were.

When the same group turned its attention to external trust defects, it quickly honed in on responding to customers—or, more precisely, its failure to do so. Customers and suppliers often inquire about issues pertaining to bills, payables, contracts and so forth. No one disagreed that quick follow-up to these inquiries was vital. How, then, could it be a chronic problem?

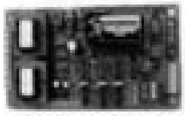
As is true of many external trust defects, companies fail to think through the "unabsorbed" costs customers must endure, in this case those that go beyond the need for specific information. Attitudinal "cracks" occur as customers who cannot get responses to their inquiries conjure up all manner of explanations—none of them good. Especially in the absence strong trust, they wonder whether they are being ignored, if the company considers other customers more valuable—or if anyone even cares! (Shades of the comment made by a customer in the study mentioned earlier: "Do you forget that you have a customer after the sale—or does it just seem that way?")

Not all trust defects are created equal. As Figure 2 shows, they range from "sprains and tears"—minor issues that can be taken care of with a little effort—to "relationship fractures." A trust defect that fractures a relationship can never heal completely: Like a scar, a bad memory is permanent. Companies can spend as much as they want in attempts to rectify this type of trust defect, but customers won't forget, particularly trust defects they feel are acts of betrayal—does a spouse ever forget an instance of marital infidelity? Seen from this perspective, service recovery, which I championed for years[4], is at best, a necessary evil—the equivalent of finding and fixing product defects in the field, which is where failure costs are greatest. At least, however, a field defect *can* be fixed. Unless customers complain, which most don't, no siren sounds when a customer's trust attitude is fractured.

The rule of thumb in manufacturing is that preventing a defect costs $1. Finding and fixing a defect in the factory through detection and correction raises the average cost to $10. When a defect must be fixed in the field, the cost jumps to $100. What is the cost of a defect that fractures a customer attitude?

Here is an example: Recently, I received a catalog from a retailer that had sold me a broad range of electrical products for years. An accompanying letter said that the catalog contained items available only to valued, long-term customers. I had been thinking about buying a new digital cordless phone system, so I eagerly opened it. When I spotted one, my immediate reaction—based on my experience with the firm—was to dial the 800 number and place an order.

Before calling, though, I did what millions of consumers are doing these days: I checked out the Web, in this case, to find out how much money I would be saving! Guess what? On another reputable company's web site, I saw a newer model of the same system for $150 less! Puzzled at first, I suddenly had a sickening moment of enlightenment, which, upon subsequent



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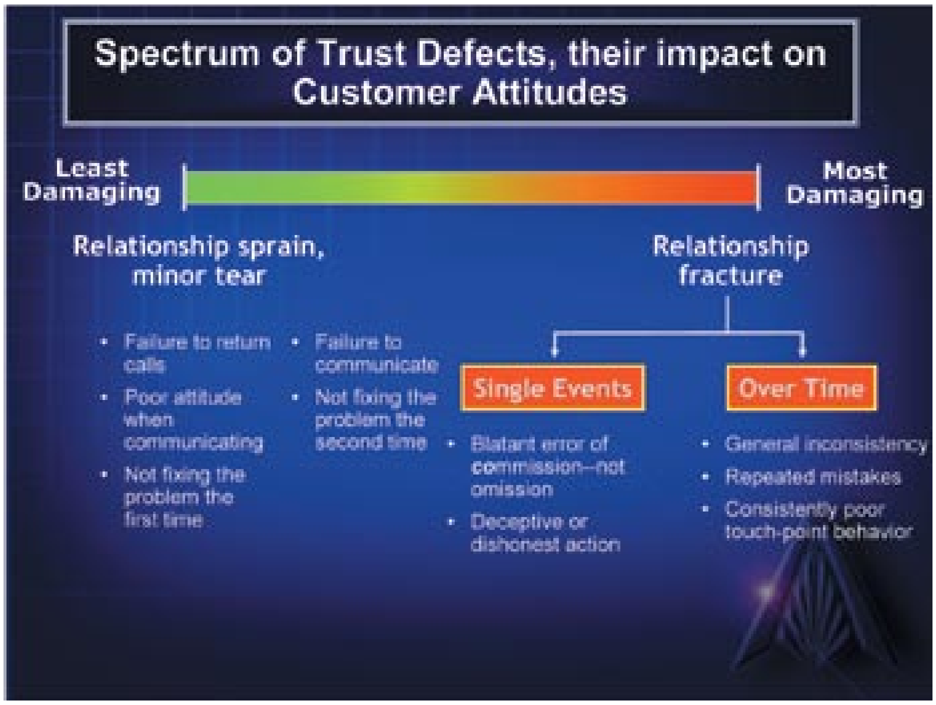

Spectrum of Trust Defects, their impact on Customer Attitudes

Least Damaging — Most Damaging

Relationship sprain, minor tear

- Failure to return calls
- Poor attitude when communicating
- Not fixing the problem the first time
- Failure to communicate
- Not fixing the problem the second time

Relationship fracture

Single Events

- Blatant error of commission–not omission
- Deceptive or dishonest action

Over Time

- General inconsistency
- Repeated mistakes
- Consistently poor touch-point behavior

Figure 2

investigation turned out to be true. My trusted supplier was trying to unload excess inventory of outdated merchandise, at grossly inflated prices! So much for being a "valued, long-term customer." Given this experience, how could I not doubt the value of *anything* the company offered in the future?

With one trust defect, this company wiped out years of investment in building its relationship with me.

Who lost? Both of us. The costs to the company, about which it will be forever ignorant because it lacks a feedback system that would instantly set off alarms in a factory, include the impossibility of ever making another sale to me, the negative effect of me telling the story to others and cynicism among the firm's employees, who presumably knew exactly what was going on and would not tolerate it being done to them. The cost to me, *which companies **never** think about,* was losing a trust relationship that had enabled me to avoid the time, aggravation and risk required to assess my future experiences with a different supplier. Another cost, which brings the Customer Rage Study to mind, was my anger about how a company I'd trusted could abuse me so blatantly.

A fascinating aspect of this example is that many people would wonder why I became so upset. Fact is, they've become accustomed to such abuse and have learned to take it in stride. That such a situation could exist is awful testimony to the supposed primacy of customers and companies' professed desire to be customer-focused.

Idea for Action:

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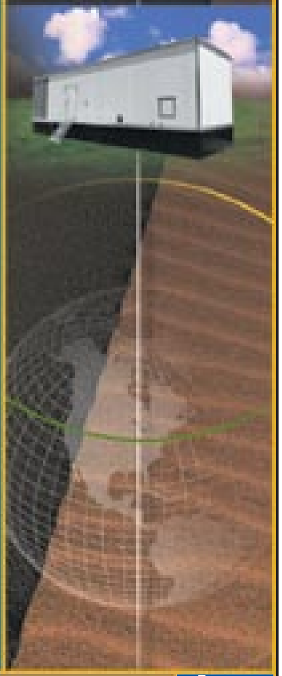
EGSA Electrical Generating Systems Association



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Identify Your Trust Defects

Ask people throughout your organization, "What trust defects…

1: Corrode the strength of our customer relationships?
2: Damage trust within our organization?
3. Negatively affect trust with our suppliers?

Collect the ideas and use them as input for a highly visible trust-defect elimination process, leaving no doubt that the company is committed to eradicating this insidious, pervasive performance drain.

Corporate wrongdoing is a major issue these days. Is abusing customers a crime? Usually not in a court of law. But when victimized customers post cyber-indictments on the Web, companies face prosecution in the court of consumer opinion—with no presumption of innocence until proven guilty! Exaggerations might abound on the Web, but where there's smoke, there's fire, and this fire is becoming an inferno that torches companies' reputations and trust like so many dry leaves. Just ask Kryptonite and Dell.

One way or another, abuse of customers cannot last. Many businesses increasingly are affected by customer reviews posted on the Web, not advertising. The EVP of Customer Experience for a major hospitality company told me, "We are naked on the Web. Customers describe their positive and negative experiences in graphic detail. Our only power to influence what they write is to make sure that they feel great about the experiences we give them."

A leading restaurateur echoed this sentiment at a symposium, when he said, "It used to be that you worried about restaurant critics writing your obituary in the newspaper. Now, it's customers who come to dine armed with cameras and hopes of creating the next YouTube sensation."

Companies only defense is a principle at the core of the product quality revolution: Prevent trust defects from occurring.

Conversely, what does it take to build, not destroy, trust? Jos. A. Bank is a clothing retailer that developed a strong trust relationship with me over ten or so years. What did they do to earn my loyalty? Here's an example—one of many over the years: I noticed odd spots on a sport coat I bought from the company several years earlier. I took it to a dry cleaner, who informed me that the problem was the fabric's dye. I decided to call Jos. A. Bank's 800 #, which is notable in itself. I wouldn't have bothered with most companies, figuring that the phone call would be a waste of time—possibly a lot of it!—and would probably leave me more upset than before I called.

My feelings of trust about Jos. A. Bank were sufficiently strong, though, that I had no such worries. In fact, had the customer service rep explained that too much time had passed since I bought the jacket, I would have understood. Imagine how I felt, though, when the rep apologized and told me to immediately send the coat back, postage paid, and, within a week, I received a refund statement, a gift card for $234.99 and a catalog! Outstanding service like this, rendered by a human, not a machine, creates a trust-building moment of opportunity—the opposite of a trust fracture. I immediately put the gift card and catalog to good use, and ended up placing an order that came to $1300!

Accounting rules require refunds to be treated as expenses. Was Jos. A. Bank's refund an expense, though? Not from the

Continued on page 28

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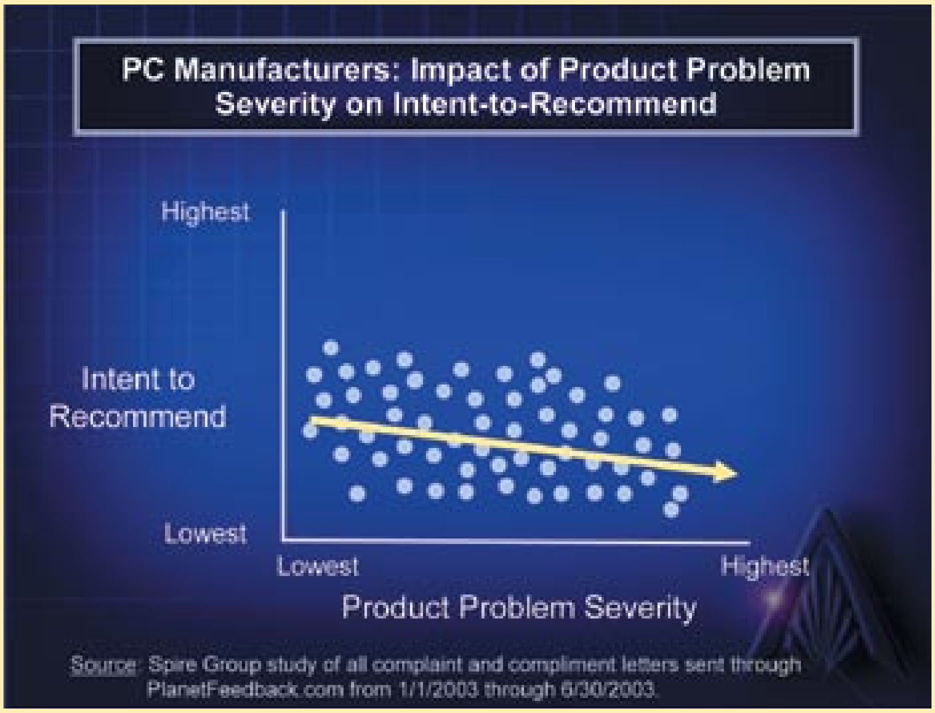
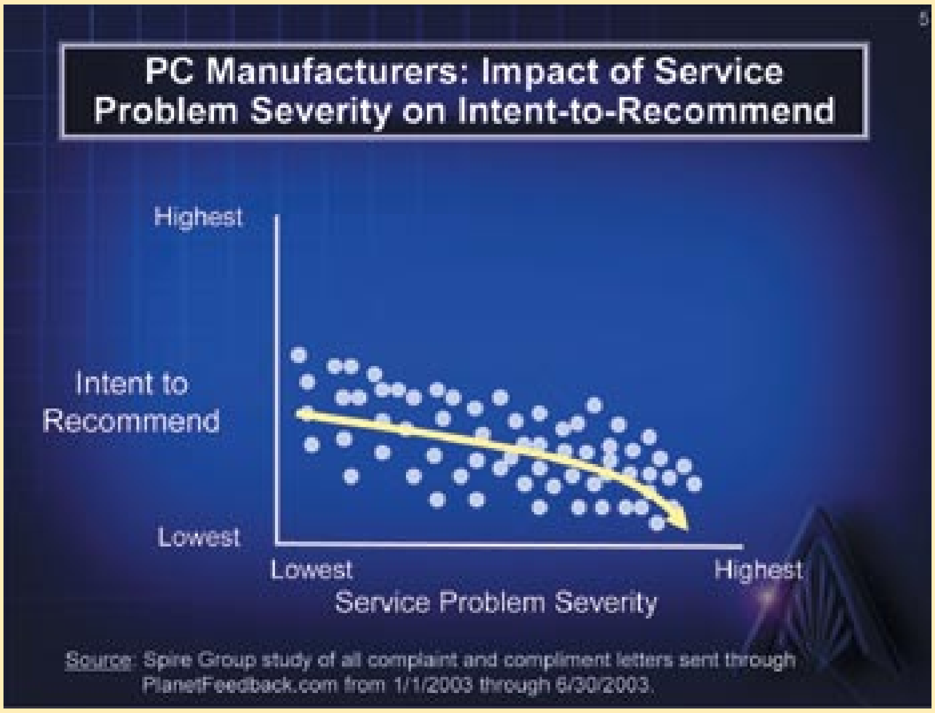
Customers' Trust in PC Manufacturers


PC Manufacturers: Impact of Product Problem Severity on Intent-to-Recommend

Source: Spire Group study of all complaint and compliment letters sent through PlanetFeedback.com from 1/1/2003 through 6/30/2003.

Exhibit 1 (above) and Exhibit 2 (below).


PC Manufacturers: Impact of Service Problem Severity on Intent-to-Recommend

Source: Spire Group study of all complaint and compliment letters sent through PlanetFeedback.com from 1/1/2003 through 6/30/2003.

I conducted a study of major PC manufacturers in which customers' perceptions were measured by analyzing complaint and compliment letters sent through PlanetFeedback.com, a prominent customer opinion website. While customer feedback from surveys often catches customers after their memories of an experience fade, or they simply have little interest in the survey topic, people who write complaint and compliment letters obviously have strong feelings they want to express. Yes, customers write far more complaint letters than compliment letters, but if the number of letters is large enough and the companies being compared are similar, the negative bias applies equally across firms.

Exhibit 1 shows that letter writers' perceptions about the severity of product problems they experienced influenced their intent-to-recommend ratings only moderately. Exhibit 2 tells a very different story. Customers' feelings about the severity of service problems they experienced profoundly affected their intent-to-recommend for the PC brands they purchased.

How could it be otherwise? Despite generally outstanding product quality, people know that problems occur, especially with complex products like PC's. It's how companies handle these problems that make or break customer trust. Incredibly, the worst company's ratio of complaints to compliments was 300% worse than the firm in next-to-last place. Is it any wonder that this company, once a staple of every great success stories list, has been pounded in the media and on the Web over the past two years, both by customers and Wall Street?

I conducted the study in 2003, before the company's problems became public, using data that could have obtained easily. The writing was on the virtual wall for the company to see. Regardless of whether they saw it or not, abusing customers at the point in the experience chain where they are at their most vulnerable—the overall tone of the complaint letters was bitter!—created a ticking time bomb. The bomb exploded—and destroyed the company's financial performance, reputation and billions of dollars of shareholder wealth.

In contrast, IBM/Lenovo and Apple scored far better than any other firm. Both companies had relatively few product complaints; service complaints were almost nonexistent. Interviews with executives at each firm left no doubt that they give much more than lip service to providing outstanding post-sale service. Although they don't use the terminology in this article, both companies clearly are in the business of producing trust attitudes, the feedstock of customer loyalty.

Few people know that the unnamed company responsible for a world-class job of lowering the customer-service bar subcontracted its customer service to IBM for years. That its performance skyrocketed throughout this period is no coincidence. At least a year before I conducted this study, though, they demanded that IBM cut the price of its service by 50%. In much better shape than when the deal was first struck, IBM refused.

Imagine, after the contract ended, a multi-billion dollar PC company creating a customer service operation from scratch, an idea that boggles the mind. How do you spell "trust fracture"?

Continued from page 26

perspective of producing trust attitudes. Instead, the $234.99 was an investment that immediately produced an ROI that CFOs dream about, providing insight into why trusting, loyal customers in the study cited earlier were 250% more profitable.

The Customer Experience Chain

The idea of combining "customer touchpoints" to create an "experience chain" is not a new one. Simply grasping the idea, however, in no way enables companies to create great customer experiences. Had factory managers only mapped the steps in their production processes, improvements would have been meager. Serious improvement requires much stronger medicine.

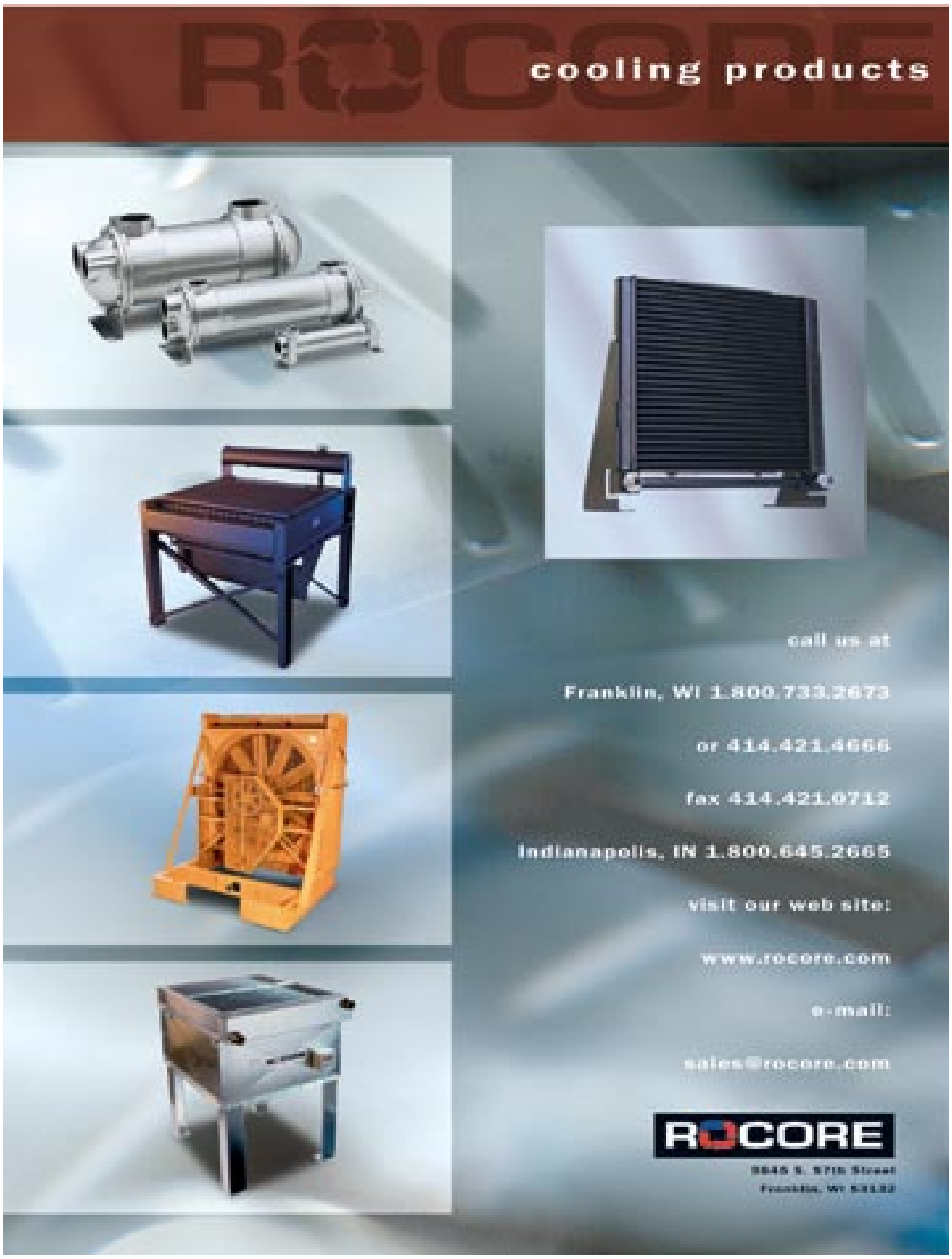
For example, as every production manager knows, even small percentages of defective output add up quickly across multiple production steps. Ninety-nine percent defect-free for a particular production step might sound good—imagine if you got a 99 on every test you'd ever taken—but ninety-nine percent quality for each step in a process that involves, say, forty, is a quality disaster. The math is simple! .99 to the 40^{th} power equals .67, a defect rate of 33 percent!

For customers, a "step" in the attitude-production process, or "link in the experience chain," occurs at every point where customers come into contact with some aspect of a company, which could number in the hundreds. The customer experience chain for a PC manufacturer, for example, begins when customers first encounter information about the company, its products and its services—more and more of which is communication the company doesn't pay for or control. Then comes the steps involved in shopping. Again, companies' control over the information customers receive is declining; their best marketing often comes from (a) customers who write positive postings on the Web, and (b) *no negative postings*!

Often, a company's first active engagement with customers comes at the point of purchase. The next step for customers is to figure out how to put their new computers together and, if all goes well with installing software, connecting modems and so forth, to start using them. If problems occur during this start-up phase, though, many people's first response is to call customer service, which, as explained in the sidebar, "The Power of Trust in the PC Business," they often wish they hadn't.

Every step in the experience chain affects customer attitudes that influence trust, loyalty and, getting right to the point, financial performance. No company would tolerate little knowledge about the production steps in its factory. Indeed, every factory has sophisticated information systems for monitoring almost *everything* that impacts performance. Why, then, do few companies have anything remotely comparable to monitor and improve the steps outside the factory that comprise their customer-experience chains? Certainly cost is a consideration, but it's no different in factories, where expected gains from more sophisticated systems always are balanced against investment requirements.

An experience-chain information system is especially important in light of the growing emphasis on enhancing customers' experiences. Manufacturers learned painfully that increasing product and process complexity creates serious quality and cost problems—the reason for heavy emphasis put on process simplification and parts reduction. Outside the factory, however, decisions to enhance customer experiences tend to be enthusiastically embraced, as opposed to the scrutiny they would receive in factories. Inadequate experience-chain information systems unfortunately puts people whose intuition throws up red flags without a common framework and language that enables them to explain their reservations without running the risk of being labeled obstructionists or lack a can-do mentality. So they keep their com-



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ments within a close circle of like-minded people—while their companies plunge bravely forward.

I have no quarrel with enhancing customer experiences, but it should never be at the expense of consistent, predictable quality. Inconsistency is the single greatest source of customers' irritation. Particularly damaging are negative surprises caused by highly touted experience enhancements. "I wish they could just get the basics right!" McDonald's became the world's largest restaurant chain by creating a production system renowned for consistency. Starbucks went further, showing it can consistently provide outstanding experiences tailored to individuals' needs. Dave Olson, Starbucks SVP of Culture and Leadership Development, stated, "It doesn't matter how many millions or billions of cups of coffee Starbucks serves, if the one you get doesn't suit you…. We will deliver a drink that suits you every time…. The experience must fit the customer."

The thought to keep in mind: "99% isn't good enough for any production step."

Expanding the Factory Walls

Previously unthinkable improvements in product quality would have been impossible without real-time process control and feedback systems that instantly flagged waste-creating problems and brought down a swarm of people who moved Heaven and Earth to resolve them. How did this happen? Starting with the teachings of Americans W. Edwards Deming and Joseph Juran, Japanese manufacturers embraced, built upon and implemented ideas that evolved into a comprehensive system for improving any production process, now known as "lean." Westerners who visited Japanese firms, trying to figure out how they could produce such extraordinarily high quality products at low cost saw the same strategies, ideas, methods and tools deployed at every firm, regardless of industry. Using the modern vernacular, Japanese firms had developed and implemented an open-source improvement process.

Consequently, Western manufacturers were given an organized, documented quality-improvement approach—JIT, "lean," the Toyota production system; at the core, they're the same—that they could apply to their businesses. Had the secret to Japanese firms' success been cultural, which was the prevailing wisdom at one point, Western firms never would have been able to transform their factories from "push"-based cauldrons of waste into "pull"-based crucibles of operational excellence.

"The Rationality of Irrationality"

Ask executives at the most quality-oriented companies if they have reached their ultimate goal—"zero defects"—and they will inevitably answer "no." To do so is a physical impossibility. But they will quickly point out that progress would be much slower if they didn't use this seemingly irrational goal to galvanize and align the organization. Visionary stretch goals are vital elements in shifting an organization's mindset and illuminating opportunities to can transform a company and change the competitive rules.

Paradoxically, therefore, the rational managerial approach is to establish and lead others toward an irrational goal.

No common model like "lean" exists outside the factory. Fortunately, although consistently producing outstanding customer experiences differs in important respects from producing zero-defect products—machining parts is very different from interacting with customers—the bedrock principles are the same. Creating a zero trust defect customer experience system rests on three principles.

1. Every business is a production process, the output of which is trust attitudes.
2. Producing zero-defect trust attitudes requires a comprehensive, integrated improvement methodology.
3. A catalyst concept that "takes away the safety nets" must be used.

Principle number one, that a business is a process for producing trust attitudes, has been made clear.

Principle number two requires a mindset shift that I call "expanding the factory walls." This metaphor brings to life the idea

Continued on page 41

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Wireless Telecommunications: A Digital Revolution

By Marion C. Solomon, Assoc. AIA, Director, Carrier Networks-Special Initiatives, General Dynamics, Wireless Services

The rapid expansion of wireless technology in the marketplace has resulted in a plethora of technologies being released. The wireless industry continues to be an exciting place. The field supplies many opportunities on both the business and technical sides. Voice applications remain the primary source of use for the industry. Security as well as system reliability has become a primary focus with carrier network designs as well.

Primary Network Growth Wireless Service Providers

There remains, two primary directions for growth in wireless technologies: Features and Performance. Voice is the primary market.

- Cingular (AT&T)—Recently merged with AT&T to form the largest wireless and land line company in the United States.
- Verizon—Second largest wireless carrier in the U.S.
- Sprint/Nextel—2006 merger. Third largest wireless carrier in the U.S.
- T-Mobile—Positioned itself as one of the largest international mobile communications carriers. First to operate a trans-Atlantic mobile network based on GSM (Global System for Mobile Communications), the world's most successful digital wireless standard.

High-tech miracles are the companion of cell phone users across America and around the world.

Digital Features

Hi-Fi Audio—Most people listen to digital music when sitting in front of their computers, or when we're out cruising around with their portable audio players. When at home, we're still more likely to be playing compact discs. A new crop of digital audio devices allows you to listen to digital audio through your stereo system. Compressed digital audio still has a long way to go before some people will relinquish their CDs. But it's truly convenient. You can spend a little to bring thousands of MP3, WMA, or AAC audio files from your PC into your living room. Spend a little more, and you can play the files over a wired or wireless network. Want to listen to Internet radio on your home theater system? No problem. How about watching your vacation photos on your TV, in perfect sync with your favorite music? Today this is a can do.

3D Gaming—The wireless realm represents an opportunity to expand and extend high-quality gaming experiences.

Marion C. Solomon, Assoc. AIA

3D is a great advance for mobile content. It dramatically changes the mobile game experience. Accelerated graphics hardware in portable devices marks the beginning of a truly exciting time for gaming.

Cameras—These systems are mostly used for surveillance. Wireless video is used for:

- Airborne Video Systems
- Night Vision Security Systems
- Child monitoring systems
- Property surveillance systems

GPS—GPS navigation is now a household name. Some applications are hot... while others continue to develop. Navigation services include location based

Continued on page 33

Application for Membership

ELECTRICAL GENERATING SYSTEMS ASSOCIATION

1650 South Dixie Highway, Suite 500, Boca Raton, FL 33432 • (561) 750-5575 • FAX (561) 395-8557
E-Mail: *e-mail@egsa.org* • World Wide Web: *www.egsa.org*

EGSA's mission is to bring together representatives of the various segments of the On-Site Power Industry, to learn, share ideas and experiences, advance the science of On-Site Power generation, improve performance and profitability of members, and the quality of service to power users.

1. Contact Information

Please type or print all information in upper and lower case (NOT ALL CAPS!)

Company _

Address __

City ______________________ State/Province ______________________

Zip/Postal Code ______________________ Country ______________________

Phone ______________________ FAX ______________________

Official Representative ______________________ Title ______________________

Representative's E-Mail ______________________ Company's Web Address ______________________

How did you hear about EGSA? ☐ Web site ☐ *Powerline* magazine ☐ Colleague ☐ POWER-GEN ☐ Other ______________________

Why are you joining EGSA? ☐ Certification Program ☐ CEU Program ☐ Power Schools ☐ Buyers Guide Listing ☐ Other ______________________

2. Member Classification

Read the Membership classifications below and check the box that describes your firm's classification.

I. FULL MEMBERSHIP

☐ MF **Manufacturer Membership**
Any individual, sole proprietor, partnership or corporation seeking membership must apply for a Full Membership as a manufacturer if they meet one or more of the following criteria:

1. They manufacture prime movers for power generation.
2. They manufacture generators or other power conversion devices producing electricity.
3. They manufacture switchgear or electrical control devices.
4. They manufacture or assemble generator sets, UPS systems, solar power, hydropower, geothermal, or any other power production or conversion system including related components or accessories for national or regional distribution.
5. They are a wholly owned subsidiary of a firm which qualifies under rule one through four.

☐ DD **Distributor/Dealer Membership**
Any individual, sole proprietor, partnership or corporation actively engaged as a distributor or dealer for products listed under Manufacturer Membership may apply for Full Membership as a Distributor/Dealer. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.

☐ MR **Manufacturer's Representative Membership**
Any individual, sole proprietor, partnership or corporation actively engaged in the representation of products listed under Manufacturer Membership may apply for Full Membership as a Manufacturer's Representative. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.

☐ EM **Energy Management Company Membership**
Any individual, sole proprietor, partnership or corporation engaged in energy management, including Energy Service Companies (ESCOs), Independent Power Producers (IPPs), Integrators, Aggregators, and other similar enterprises may apply for Full Membership as an Energy Management Company.

☐ **Associate Full Membership** (mark appropriate category at right)]
Any individual, sole proprietor, academic institution, student, partnership or corporation meeting the requirements of Associate Regular Membership may apply for Full Membership at their option to enjoy the privileges of Full Membership, including the rights to vote and to serve on EGSA's Board of Directors. Initiation fees and annual dues will be assessed at the existing non-manufacturers' Full Member rates.

II. ASSOCIATE REGULAR MEMBERSHIP

☐ AA **Trade Publication Membership**
Any trade publication dealing with the electrical generating systems industry or its suppliers may apply for Associate Membership—Trade Publications.

☐ AB **Trade Association Membership**
Any trade association made up of individual or company members sharing a common interest in the electrical generating systems industry may apply for Associate Membership—Allied Associations.

☐ AC **Engineer Membership**
Any consulting or specifying engineer may apply for Associate Membership—Engineer. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AD **End-User Membership**
Any individual employee of a company who owns or operates electrical generating equipment and/or related switchgear or components, whose responsibility to his employer includes planning, design, installation, supervision, or service of such equipment may apply for Associate Membership—User. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AE **Service Membership**
Any individual, organization or academic institution that offers services such as research, testing or repair to the electrical generating systems industry may apply for Associate Membership—Services. Membership may either be held in the individual's name or the organization's name under this classification. Individual companies whose employer or parent organization qualifies as a Full Member, as described in the Full Membership section, do not qualify for this category.

☐ AG **Educational Institution Membership**
Any postsecondary vocational-technical school or college offering on-site power generation-related instruction may apply for Associate Membership-Education Institution.

☐ AR **Retiree Membership**
Any individual who retires from a member company may apply for Associate Membership—Retired. This classification does not apply to any individual who is employed more than 20 hours per week.

☐ AF **Student Membership**
Any individual currently enrolled at an academic institution may apply for Associate Membership—Student.

FOR BOARD OF DIRECTORS USE ONLY

☐ YES ☐ NO Date: ______________________

Name (Print) ______________________

Signature ______________________

FOR OFFICE USE ONLY

Amount Paid $ ____________ Check Number ____________

Date Received ____________ Date Processed ____________

Mentor Assigned Committee Interest

Application for Membership – page 2

Dues Schedule (Use for Section 3)

	Annual Dues	Initiation Fee	TOTAL
Manufacturer	$825	$200	$1025
Energy Management Companies	$825	$200	$1025
Distributor/Dealer	$285	$100	$385
Manufacturer's Rep	$285	$100	$385
Regular Associate Member	$200	$100	$300
Full Associate Member	$285	$100	$385
Retiree Member	$90	$0	$90
Student Member	*Complimentary*	$0	$0

NOTE: A FULL 12-MONTH DUES PAYMENT MUST BE RECEIVED WITH THIS APPLICATION. The Association's Membership Year is January 1 through December 31. Dues payments that extend beyond the first Membership Year will be applied to the second year's dues.

FULL PAYMENT MUST BE RECEIVED WITH APPLICATION.

3. Membership Dues (Please fill in the appropriate TOTAL amount from the above dues schedule.)

Membership Dues $__________

Membership Plaque (optional)** $ 39.95**

On-Site Power Reference Book (optional)** $ 125.00**

Florida Residents: Add 6.5% Sales Tax to ** items $__________

*Continental US Residents add $5 shipping/handing to**items.* $__________

*Non Continental US Residents should call EGSA Headquarters for shipping charges for **items.* **TOTAL** $__________

4. Payment Method (Payable in US$ drawn on U.S. bank, U.S. Money Order, or American Express)

☐ Check #____________ Amount $__________

☐ Money Order

☐ Mastercard ☐ Visa ☐ American Express

Card # ______________________ Exp. Date ______

Signature: ______________________________

Print Name: ______________________________

5. Products/Services

Please describe the nature of your business (50 words or less, NOT ALL CAPS) If you are a Manufacturer's Representative or Distributor, please indicate which manufacturers you represent and/or distribute for:

____

____

____

____

____

____

Available Codes:

01 ---Batteries/Battery Chargers
02 ---Control/Annunciator Systems
04 ---Enclosures, Generator Set
05 ---Engines, Diesel or Gas
06 ---Engines, Gas Turbine
07 ---Engine Starters/Starting Aids
08 ---Filters, Lube Oil, Fuel or Air
28 ---Fuel Cells
03 ---Fuel Tanks and Fuel Storage Systems
09 ---Generator Laminations
10 ---Generator Sets
11 ---Generators/Alternators
12 ---Governors
13 ---Heat Recovery Systems
14 ---Instruments and controls, including meters, gauges, relays, contactors, or switches
15 ---Load Banks
16 ---Motor Generator Sets
17 ---Radiator/Heat Exchangers
18 ---Relays, Protective or Synchronizing
19 ---Silencers/Exhaust Systems/Noise Abatement
20 ---Solenoids
21 ---Swtichgear and Transfer Switches (Automatic or Manual), Bypass Isolation Switches, and/or Switchgear Panels
22 ---Trailers, Generator Set
23 ---Transformers
24 ---Uninterruptible Power Supplies
25 ---Vibration Isolators
26 ---Voltage Regulators
27 ---Wiring Devices or Receptacles

Enter codes here:

Products sold: ______________

____

Products rented: ______________

____

Products serviced: ______________

____

Do you buy AND sell equipment? ☐ Yes ☐ No Do you manufacture packaged equipment? ☐ Yes ☐ No

6. Sponsor(s)

: A"Sponsor" is an EGSA Member who interested you in filling out this application. It is not mandatory that you have a sponsor for the Board to act favorably on this application; however, if a Member recommended that you consider membership, we request that individual's name and company name for our records.

Sponsor Name ______________________Company Name ______________________

7. Official Representative's Authorization

Signature ______________________________Date ______________

Continued from page 30

services for fleet and asset management, personal location and homeland security applications.

Bluetooth—*Bluetooth* wireless technology is the ability to handle both data and voice transmissions at the same time. This enables users to enjoy variety of innovative solutions such as a hands-free headset for voice calls, printing and fax capabilities, and synchronizing PDA, laptop, and mobile phone applications to name a few.

Multimedia—These are IP based services that are, in large part, next generation networks. We can now talk, play games, attend classes, pin point our location, listen to music and watch videos for one device.

We Are Part of a Digital Revolution

New multimedia technologies have been added to networks. This has enhanced network platforms to encompass high speed telephone and multifunctional technologies for:

- Digital Imaging
- Portable Audio/Video
- Digital Radio
- Home Theater
- HDTV

System Reliability, Integration and Innovation, Network Security

Public Safety System—Police and fire command connected to a private network. This will offer quick access to criminal records, mug shots and building blueprints. The system is also capable of video transmission

E911—The FCC has made it mandatory for all carriers to comply with E911 services. The service is provided to home your location and respond to emergency calls. Simply put, signal strength measurements are from 3 infrastructure radios to calculate the whereabouts of the caller (triangulation)

Public Safety Network

The information revolution has resulted in more people having faster access to more accurate data than ever before. Both the public and law enforcement practitioners expect agency information systems to respond quickly with an enhanced ability to recognize crime patterns and problem areas. As a result, law enforcement agencies have improved their information systems to better analyze and use the data they collect for:

- Hurricanes
- Tornadoes
- Earthquakes
- Terrorist Attacks

Secondary Power

Emergency power applications should and will be a significant part of network designs. Design issues to be considered are:

- Network development located around highly populated areas. Security and site confinement is essential.
- Decibel levels. We must meet acceptable standards to exceed zoning requirements.
- Inner city emission levels. Alternative methods should be applied to operate units.
- Environmental design that is compatible to surrounding structures.

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It's no secret that technology is becoming more complex—not less—and that makes today's On-Site Power Generation System a lot more expensive. End-users—your customers—don't want just anybody with a basic knowledge of mechanics to install and maintain their equipment. They want to be confident that all work has been performed by qualified personnel. Suppliers want assurance that skilled technicians are performing maintenance and repairs to guard against unnecessary returns or warranty repairs.

As Good as Your Word

In the past, your word was the only assurance that your technicians are skilled and knowledgeable. But now, through EGSA's Electrical Generator Systems Technician Certification Program, there is a way that you can back up those words with objective evidence of your technicians' proficiency.

EGSA offers you a big advantage: For the first time in our industry, we have an objective and accurate way to determine generator technician proficiency. That means that the same standards will be used to measure the skills and knowledge of technicians from Maine to Manitoba and Mexico. Yes, Manitoba and Mexico! EGSA has determined that there is no reason why the test could not be fairly applied to any NAFTA technician.

What are the Benefits?

For the Employer, certification helps ensure that your technicians have the critical knowledge and skills to succeed in their jobs. And everyone will be comfortable knowing that your certified techicians' expertise has been confirmed by *the* industry organization through a program that was developed by a university. Encouraging and helping your technicians become certified signifies your commitment to the highest of standards. Plus, it lends an added level of credibility to your firm and can sharpen your competitive edge. Employing certified techs will promote customer satisfaction and you won't have to be shy about offering assurance that your techs are qualified. Certification can also help you select potential new hires, analyze job performance, evaluate employees and motivate technicians to enhance their skills and knowledge.

Think about the message that certification sends to those with whom you do business. Why would anyone want a technician who isn't certified performing critical maintenance or repair tasks? Employing certified technicians gives you an added tool with which to market your business.

As our members have said, "We've seen too many backyard mechanics damage expensive equipment. This program will provide credibility for my company and will help build pride and a commitment from technicians to be the best."

For the Technician

Certificate holders benefit too. Certification shows employers, clients, and associates that you are committed as a professional. It provides recognition of your knowledge and skill, shows your commitment to your profession and can help with job advancement. Certification is a mark of excellence that you carry with you everywhere you go.

Acquiring certification indicates that you have the knowledge and proficiency required to perform as an Electrical Generating Systems Technician professional. Becoming certified can increase your salary, enhance your skills, and make your job more satisfying.

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Certification helps ensure that your technicians have the critical knowledge and skills to succeed in their jobs.

The Certification Test

EGSA collaborated with Ferris State University to develop the certification test and program. Through a scientific process, our panel of technical experts identified 12 duty areas (such as "Basic Electricity") and 61 tasks (such as "demonstrate knowledge of AC electrical theory") within the duty areas. The duty areas and tasks were ranked and rated in terms of their relative importance, the frequency with which a task is performed, and skill level (i.e. Senior/Expert; Intermediate; and Entry Level.) All this data was combined to develop the certification test that was then statistically validated through a pilot test taken by generator technicians from across the United States.

Who can take the Test?

There are no pre-qualifications for taking the EGSA Certification test. We recommend three or four years of field experience before taking the test. Technicians who have had formal education in On-Site Power Generation (a degree or certificate from a technical school or community college) may need less field experience. Those who pass the test will have a comprehensive knowledge of basic electricity, the functions of a gen-set's mechanical and electrical components, the interactions and relationships among components and an understanding of various elements of the installation, service, maintenance, and repair of gensets and On-Site Power Generation Systems.

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- *Basic Electricity*
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- *Governors*
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- *Generators/Alternators*

Use the Study Guide to Prepare!

Use of the program's Study Guide is an excellent way to help techs prepare for the test and should clearly indicate if they are ready to take (and pass) the certification exam. In addition to useful formula pages, the guide contains almost 200 multiple choice practice questions that cover all parts of the certification test. In addition to identifying the correct answer, the guide also indicates in most cases why a particular choice is correct and why the others are incorrect. The Guide also identifies resource material where techs can get additional or more in-depth information about a given topic.

Need more information? Visit *www.egsa.org* to find extensive and detailed information about the certification program. Or contact EGSA Director of Education George Rowley via e-mail at *g.rowley@egsa.org*.

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Certified status is an indication that an individual has completed a combination of defined education, experience or examination requirements. However, Certification is not a guarantee or assurance of the competence or ability of any particular individual. Further, given the rapid changes in the field, the Electrical Generating Systems Association cannot warrant that the Examination and other Certification materials will at all times reflect the most current state of the art.

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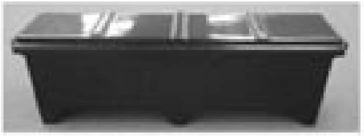

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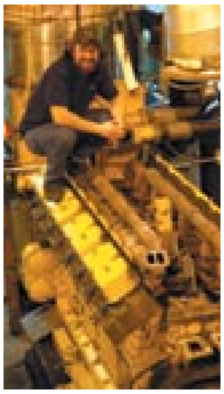

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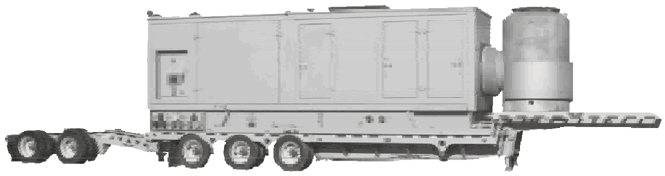

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The Role of Project Management in On-Site Power Generation Industry

From left: Jeff Lynch, Engineering Manager, Ring Power Corporation; Mark Andresen, Vice President Power Generation, Cummins Atlantic, LLC and Aaron Tasin, Operations Manager, Nixon Energy Solutions.

Project management is the application of organizing and managing resources in order to meet the requirements of a particular project. There is no doubt that good Project Management is an important role that must be filled for any business in the Power Generation Industry. Regardless if you have a salesmen function in a dual role or if you have a dedicated project manager there is a need for good structure, organization, and tools to be used to satisfy the customers' needs. In a complex enough business the project manager can affect the gross margin a couple percent one way or the other.

Although Project Management has always been around in some fashion, the beginning stages of modern Project Management can be attributed to Henry Gantt and his famous Gantt Chart. Then, in 1950's the United States Navy in conjunction with Lockheed Corporation developed the "Program Evaluation and Review Technique" (PERT) and in a joint venture between DuPont Corporation and Remington Rand Corporation the "Critical Path Method" (CPM) was developed for managing plant maintenance projects. Both of these mathematical techniques spread into private industry. In 1969 the Project Management Institute (PMI) was formed to serve the interest of the project management industry. The Project Management Institute publishes the "Project Management Body of Knowledge" (PMBOK) guide, currently in its third edition, and is the only ANSI standard for Project Management.

Regardless of your business, or who functions as your Project Manager, establishing a methodology is vital to the over success of your business as the goal has always been to deliver the project on time, on budget, and with the correct scope. In order to insure this, there are five components (stages) of the order to installation process that must be managed. As you read through these five Project Management Stages you will see the opportunities where you are possible under managing or over managing your sales. These five Project Management Stages are: Initiating Processes, Planning Processes, Production/Executing Processes, Monitoring and Controlling Processes, and Closing Processes.

The Initiating Process is crucial to the internal success of the Project. This is where you define the deliverables, the scope, and the stakeholders of the project. In order to do this, you will need to:

- define what is being purchased and the time frame required to deliver
- perform a financial analysis of the costs and
- select the stake holders (including users and support personnel for the project)

This is where an experienced project manager's input is invaluable as they may have a better understanding of delivery time frame, true costs of adders/options, customer/contractor "likes" and "dislikes", etc.

The Planning Process is crucial to the overall success of the Project. This is where you have your kick-off meeting with the customer to make sure that you are in fact selling them what they want to purchase. Any necessary changes can be made with the minimum amount of impact on time and cost, and allows for the changes to be properly documented in a change order. It is best to involve everyone that has been involved and will be involved in the project to this meeting to avoid future conflict. Typically this would involve the salesperson and the project manager on the seller's side along with the person who negotiated the purchase and the person implementing the project on the customer side.

In the world of the On-Site Power Generation Industry and for the scope of this article the Production/Executing Process is simply ordering the equipment per the agreed scope and defining the delivery variables. Unless you are the manufacturer there is little substance to this common Process.

The Monitoring and Controlling Process is where project management activity peaks again. The typical on-site power generation has several pieces, manufactured by several different manufacturers, whose delivery is all dependent on a contractor completing their job and/or the delivery of some other piece of equipment. This is where using some of the tools such as the Gantt Chart, PERT, CPM, or others earlier can ease the job of the Project Manager and insure that the project will be a success. Bad planning can cause items to ship early and require storage or items to ship late and require expedited fees and/or unnecessary overtime and an unhappy customer.

The Closing Process is where the customer signs off that the equipment supplied is satisfactory and where the warranty will begin. This is another vital step in meeting the customer requirements as start up must be scheduled and performed in a timely manner. Often times the customer even needs to shut down their plant or business to perform the necessary testing, so proper planning is important.

As stated before the goal is to deliver the project to the customer on time, on budget, and with the correct scope. By looking over your current processes and determining how each of the five mentioned Processes fit into your business, you are sure to make an impact on better customer satisfaction and better internal controls. ■

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Continued from page 29

that every person in a business is part of a large-scale production process to create defect-free customer attitudes. Establishing a powerful, visionary perspective is a vital first step, both to align people with achieving a common goal and to integrate functional silos, which almost always have been optimized to achieve disparate goals—often through years of hard work! Nothing will make eliminating functional barriers easy—just ask GE—but the task will be much harder without a compelling vision to guide the changes in priorities and decisions that must occur.

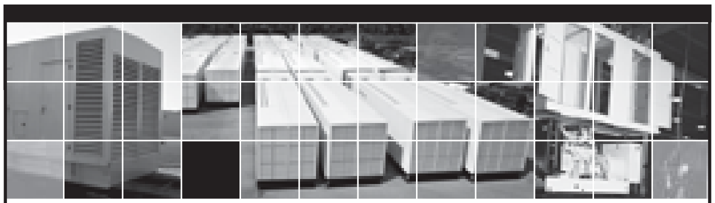
The "expanding the factory walls" idea also enables an organization to tap into the rich lode of ideas, tools and words that produces tremendous successes in manufacturing. Take the word "defect." Used in a factory context, it opens the door to a large and powerful body of knowledge. Galvanizing an organization to achieve major change becomes easier when people adopt a language that embodies the changes desired. Further, the language creates a foundation for new ideas and phrases. For example, adding the word "trust" to "zero defects" creates a new phrase, "zero trust defects," which illuminates previously unrecognized opportunities.

I specifically picked the word "defect" because it transcends differences between products and services. Whether a defect is external or internal, it must be identified and eliminated. Moreover, everyone knows the standard when it comes to defects: *zero*. No ambiguity here. (See Sidebar, "The Rationality of Irrationality.)

The third principle underlying the creation of a zero trust defects production process is to embrace a "take away the safety nets" idea—a catalyst for improvements that, when understood, opens people's eyes to otherwise "invisible" costs and opportunities. A catalyst concept—JIT is a good example—also generates enthusiasm and urgency that provide the power to achieve rapid, large-scale change. Without JIT to force identification and elimination of waste in every aspect of a factory, few companies would have had the stomach to throw their complex, inefficient, defect-prone "push" production systems on the scrap heap. True catalyst concepts are rare. Fortunately, one exists that is ideally suited to creating and supporting a zero trust defects production process: an Extraordinary Guarantee. I first wrote about this idea in *HBR* in 1988. Since then, every company that has done an excellent job of guarantee design and implementation has achieved performance gains that were not just good, but were spectacular. Although many firms expressed keen interest in the idea, few of them figured out how to apply it—creating the opportunity that exists today.

Climbing the Mountain

Creating trusting, loyal customers is not a foreign idea that will leave people in your organization shaking their heads in befuddlement. Everyone knows what a great experience is. And everyone is well aware of the pain awful experiences create. Especially in this era when corporate ethics is a boardroom topic and every company's vision and values statements contain words like integrity and honesty, what could be



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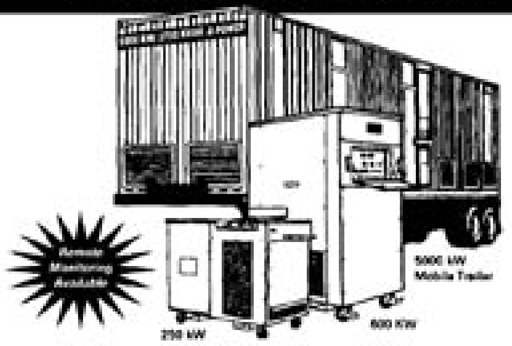

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more meaningful to every person in your company than an unequivocal statement, driven home by executive action, not just words, that the company is embarking on an unyielding, visionary journey to find and eradicate trust defects wherever they exist?

No executive faces a shortage of challenges, but one thing is absolutely clear: You can do this.

Companies successfully made the wrenching changes to transform their manufacturing operations, IT systems, supply chains and global distribution. The changes required to create a system that consistently produces zero-defect customer attitudes is no different. It's a big challenge—*very* big. But great companies prove their greatness by overcoming such challenges and earning the outsized profits such success entails.

So, why not create a system that systematically produces trusting loyal customers one after the next—and that revolutionizes your industry?

In Closing…

Years ago, the late Philip Crosby changed the course of business with two ideas.

First, he argued that any goal except "zero defects" was setting the bar too low. For many manufacturers, that seemingly irrational challenge now is a table stake. Zero trust defects extends his logic beyond the factory walls, imbuing it with new meaning and energy.

Crosby's second business-changing insight was, "Quality is free." So, too is trust.

About the Author

Christopher Hart, Ph.D., was the Opening Keynote Speaker at the recent EGSA Annual Spring Convention. He is a faculty member at the Cornell School of Hotel Administration and president of Spire Group *www.spiregrou.biz*, a management-consulting firm. Previously, he was a professor at Harvard Business School. He may be reached for comments at *chart@spiregroup.biz* ■

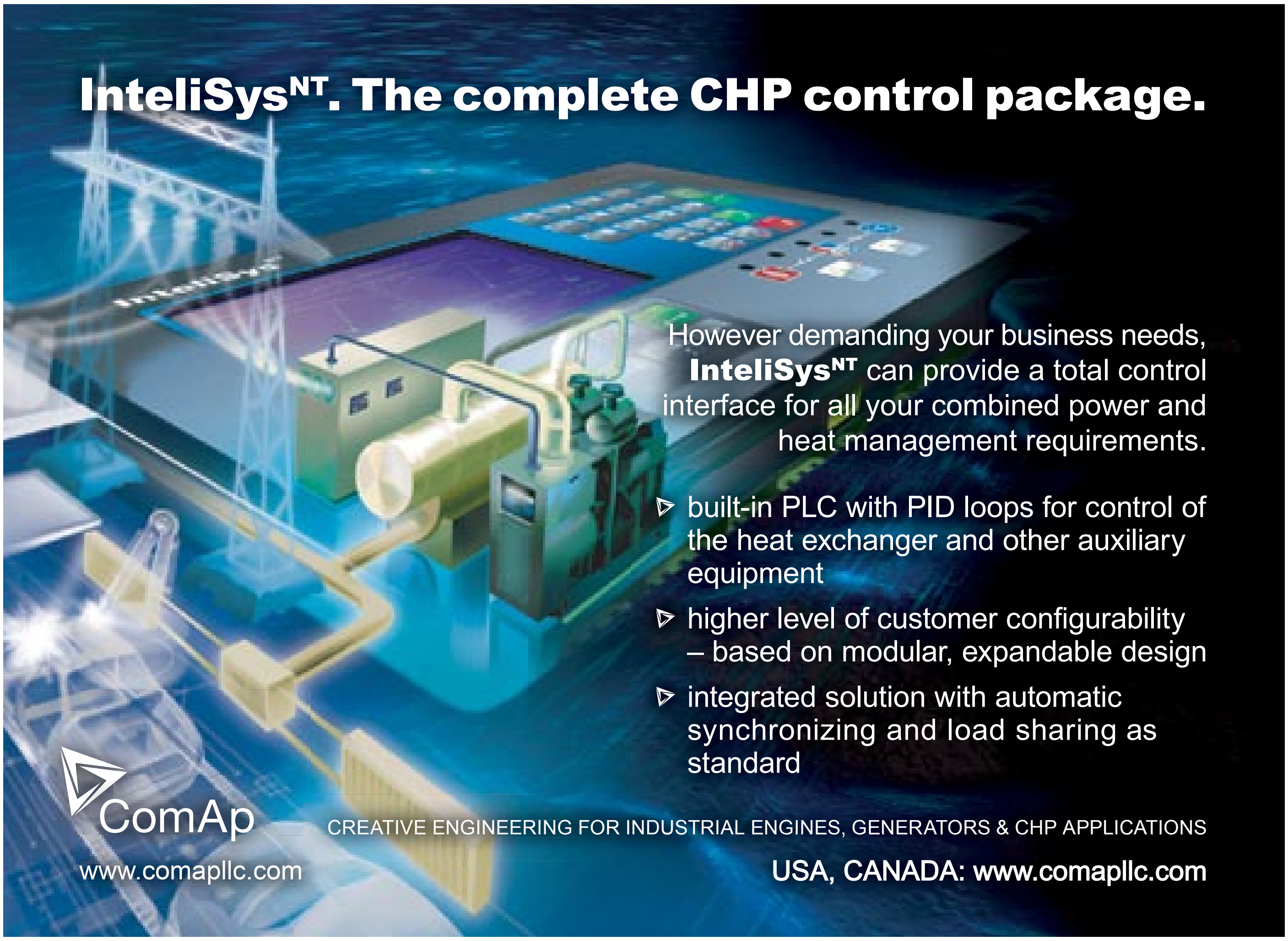
Footnotes

[1] Drucker, Peter, *The Practice of Management*, Harper-Collins, 1954.

[2] Christopher Hart, "Beating the Market with Customer Satisfaction," *Harvard Business Review* (March, 2007).

[3] Nirmalya Kumar. "The Power of Trust in Manufacturer-Retailer Relationships" *Harvard Business Review* (Jan-Feb 1998): 92-106.

[4] Chris Hart, "The Profitable Art of Service Recovery," *Harvard Business Review* (July-August 1990): 148-156. (Reprint #90407)



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South Florida's Broward County issues Code Advisory on Residential Standby Generator Installations

After the worst hurricane season on record, Florida lawmakers were keen to prevent the widespread—and prolonged—power outages that plagued South Florida in the wake of Hurricanes Katrina and Wilma. Lawmakers passed several measures requiring certain gas stations and apartment buildings to install emergency standby power. The residential emergency power market is also growing. As a result, Broward County has recently issued a code advisory on the installation of standby generators for residential applications.

Robert Andrews, Chief Mechanical Code Compliance Officer for the Broward County Board of Rules and Appeals, issued the advisory and said that installation of certain self contained generators only requires an electrical contractor and an electrical permit while others could require up to four contractors and four separate permits. Regardless of the contractor or permits required, said Andrews, there are important minimum code requirements in the various Florida Building Codes, Florida Fire Prevention Code and their adopted Standards.

"Based on phone calls and conversations I have had with contractors, inspectors, engineers, home owners associations and lawyers," said Andrews, "it became apparent there was a need to inform the industry on the applicable codes that pertain to the installation of these generators. With the help of local jurisdictions and industry, I have summarized nine minimum code requirements (excluding electrical requirements). The Board of Rules and Appeals Mechanical/Smoke Control Committee reviewed these code requirements at two separate meetings and unanimously recommended sending the list of these requirements to the full Board of Rules and Appeals for their approval and distribution to the Broward County's Building Departments. Subsequently, the list was approved by the Broward County Board of Rules and Appeals."

The minimum code requirements are derived from the 2004 editions of the *Florida Building Code* (FBC), *Florida Residential Code* (FRC), *Florida Mechanical Code* (FMC) and the *Florida Fuel Gas Code* (FFGC). Also listed are the relevant adopted National Fire Protection Association Standards and American National Standards Institute/American Society of Mechanical Engineers Standards.

"The only contentious minimum code requirement was Sec. 401.5.1 of the FMC and Sec. 303.4.1 of the FRC," said Andrews, "which requires a minimum separation of 10 feet for hazardous or noxious contaminants to openable windows, doors, vents, etc." He noted that the wording in these two code sections are almost identical with the exception of Sec. 303.4.1 of FRC which allows certain contaminants to terminate a minimum of two feet above an opening. This would not be appropriate for CO because it is heavier than air.

"Carbon monoxide produced by generators would certainly fit into the category of hazardous and noxious," said Andrews. Carbon monoxide is an odorless, colorless, toxic gas and a lethal poison produced when fuels such as gasoline are burned. Because it is impossible to see, taste or smell, carbon monoxide can kill you before you are aware it is in your home. The potential threat and deaths from CO are well documented. The controversy of this section, said Andrews, derives from the numerous instances where the above mentioned 10-foot separation is either very difficult or impossible to achieve. This is particularly true with single-family residencies built on zero lot lines and for attached townhouses.

Minimum Code Requirements for Permanent Residential-Type Standby Generators

- Generators (Engines) shall be installed at least 5 feet from openings in walls and at least 5 feet from structures having combustible walls unless there is an adjacent wall that has a fire resistance rating of at least 1 hour between the structure and generator.
- The generator shall be installed in compliance with floodplain management construction standards (same elevation above grade as the interior first floor of the building).
- Generators that are exposed to wind shall be installed to resist the wind pressures according to ASCE (American Society of Civil Engineers) 7-2002.

Exception: Ground mounted generators 36 inches or less can be installed according to Sec. 301.13.1 of the Florida Mechanical Code.

- Generators installed at grade level shall be supported on a level minimum 4-inch nominal (3.5 inch actual) concrete slab or other approved material extending a minimum of 2 inches above adjoining finished grade. Such slabs shall be placed on clean, thoroughly compacted sand or crushed rock free from organics, debris or other deleterious materials.
- Generator exhaust shall be located so as not to create a nuisance. Exhaust termination shall be a minimum of 10 feet from any openable openings (doors, windows, vents, etc.) or air intakes.
- Generators shall be listed and labeled. Generators shall be installed according to the manufacturer's recommendations and by the terms of their approval, in accordance with the conditions of the listing. Where conflicts between the code and the conditions of listing or the manufacturer's installations occur, the provisions of the code shall apply. Where a code provision is less restrictive than the conditions of the listing of the generator or the manufacturer's installation instructions, the conditions of the listing and the manufacturer's installation instructions shall apply.
- When applicable, the following Standards shall apply: NFPA 54-*National Fuel Gas Code*, NFPA 58-*Liquefied Petroleum Gas Code*, NFPA 37-*Stationary Combustion Engines and Gas Turbines*, NFPA 30-*Flammable and Combustible Liquids Code*, ANSI/ASME B31.3 *Process Piping*, 1999 and the *Florida Fuel Gas Code*.
- Installations shall comply with the Florida Fire Prevention Code.
- Maximum allowable sound levels and property setbacks shall comply with local jurisdiction's requirements.

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The State of the On-Site Power Market

Ray Kacvinsky, Vice President - Power Generation
Marathon Electric Mfg. Corp.

This presentation will review EGSA generator statistics from 2000 through the first part of 2006. EGSA market data will be compared against other industry information using an economic early warning technique with the data to develop a near-future On-Site Power market outlook.

Current Health of the Large Engine Industry–2007 Statistics

Mark McNeely, Publisher and Editor,
Diesel and Gas Turbine Publications

For the past 30 years, Diesel & Gas Turbine Worldwide has published its annual Power Generation Order Survey, which encompasses all piston and gas turbine engine orders for power generation applications 500 kilowatts and above. This presentation will analyze this year's survey figures, including which engine ranges saw increased orders, or decreased in volume. It will also break out various engine order trends by type of fuel, type of service and geographic location.

Yield to New Ideas

James B. Lloyd, President & Owner
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This presentation will discuss methods for employees and employers to find the positives with change. Whether it is a corporate merger, corporate restructuring, or downsizing; finding the positives in change will create an environment of growth and loyalty.

Luncheon Keynote: The Cookie Never Crumbles

Wally Amos, Chip & Cookie

Wally Amos is a man of wisdom, a man of humor, and a man of joy. And he has learned the greatest secret in life: You can be happy no matter what. Wally will share his inspiring collection of "recipes," and tell you how adversarial situations are often blessings in disguise, and how the lessons we learn in life sometimes come from the most unexpected places.

Residential Standby Power: The Future of On-Site Power in the Home

Todd Lathrop, Senior Design Engineer
Eaton Corp.

The demand for electricity in the residential sector continues to increase as more power-hungry devices are being added to the home environment. As the power grid continues to become more decayed and overloaded and the frequency of storm-related power outages continue to increase, the reliability of electrical power to the home becomes less. For these reasons pad-mounted standby generators are quickly becoming the air-conditioners of yesteryear. This presentation focuses on the state of the residential generator business and where it is going.

Impact of Asia on North American Manufacturers

Speaker To Be Determined

This presentation will discuss experiences and observations of the on-site power business in Asia. It will also cover what it means for North American businesses in our industry, the potential impact on them and how to prepare your business.

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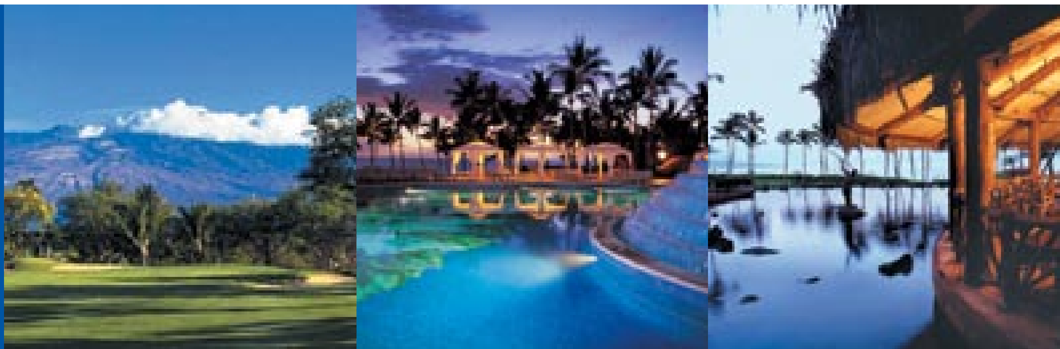

Tognum Group acquires Katolight

Tognum GmbH, headquartered in Friedrichshafen, Germany, has acquired Katolight Corp., a U.S. manufacturer of generator sets based in Mankato, MN. Katolight produces diesel and gas-powered engine generator sets for industrial and agricultural applications as well as for emergency power supply, covering a power range of 15 to 2,800 kilowatts. With around 340 employees, Katolight posted sales revenues of approximately $135 million in 2006/07 (year ending March 31, 2007). The parties to the transaction have agreed not to disclose any details of the price paid.

"With the acquisition of Katolight, we have passed another milestone on our track to become a globally leading provider of decentralized power generators," stated Volker Heuer, CEO of Tognum. "Katolight is a perfect element in our growth strategy, because it is a well-positioned brand and an excellent supplement to our product range in the important and further growing North American market. Another crucial factor is that Katolight gives us direct access to end-customers."

Business relations have already existed between Tognum and Katolight for many years. For example, some of Katolight's generator sets are based on diesel engines from the core Tognum company, MTU Friedrichshafen GmbH. Its subsidiary, MTU Detroit Diesel Inc. (in Detroit, MI) supplied more than 170 of its Series 60, Series 2000 and Series 4000 engines to Katolight last year.

Katolight, a family owned business founded in 1952, was most recently owned by Kay R. Jacobson and managed for the past 21 years by her husband, Lyle G. Jacobson. The new company in the Tognum Group will play a key role in the Systems and Components division offering standardized power generators. Katolight will be operated as a brand for generator sets based on diesel engines. It complements the well-known Tognum brands MDE and CFC Solutions, which specialize in gas-engine generators and fuel-cell generators, respectively.

"We are excellently positioned in the marketplace with this trio of proven and future-oriented products for the constantly growing demand for local power generation," stated Tognum Executive Vice President Christof von Branconi, who is responsible for the Systems and Components division. "It is becoming increasingly important to have electrical energy available quickly and reliably wherever it is needed," pointed out Branconi. "This is particularly apparent in the United States, where hurricanes or heavy snowfalls often disrupt the regular power supply."

With immediate effect, Katolight will be managed by Armin Groeber as CEO, who until now has been responsible for the entire assembly of engines and main components at the core Tognum company MTU Friedrichshafen. Groeber already has over two years' of business experience in the United States: he was Head of Operations for the North American region from 2002-2004. ■

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New EGSA Members

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Ann Arbor MI
(734) 913-0091 Fax (734) 913-0095
Contact: Fred Sheill, Sales Engineer
Business: Supplier of prototype castings.

Burdette Electric, Inc. . . . . (DD)
Aberdeen SD
(605) 229-3106 Fax (605) 229-1387
Contact: Dan Burdette, President
Business: Burdette Electric, Inc. is an electrical contracting business. One of our specialties is designing/building for standby power systems. We service all that we sell. Our primary focus is commercial installations and health care facilities.

Cox Enterprises Inc.. . . . . (AD Full)
Atlanta GA
(678) 645-0632 Fax (678) 645-1632
Contact: Keith Mask, Director of Energy & Engineering
Business: Our company owns and operates electrical generating equipment and related switchgear. Our sole responsibilities include: planning, design, installation, supervision and service of such equipment.

Diesel Engine Technician, Inc. . . . .(AE)
Caguas PR
(787) 782-1439 Fax (787) 782-7456
Contact: Noel Rodriguez Torres, President
Business: Generator maintenance and service.

Empire Power Systems . . . . (DD)
Phoenix AZ
(602) 333-5639 Fax (602) 333-5683
Contact: Nicholas Cooksey, CSA Manager
Business: We are the authorized Caterpillar Dealer for the State of Arizona. Retail sales and service for all electrical power generation.

Graye Electrical Services, Inc. . . . . (AD)
Livonia MI
(734) 744-0216 Fax (734) 744-0221
Contact: Julius Graye, President
Business: Graye Electrical Services has been providing dependable, cost-effective electrical service and installation services since 1973. We specialize in commercial and industrial service work, design & build, emergency generators, power upgrades.

Johnson & Towers Inc. . . . . (DD)
Baltimore MD
(410) 687-0500 Fax (410) 687-4743
Contact: Thomas A. Peterson Sr., Power Systems Sales Manager
Business: Johnson & Towers is a distributor for MTU/DDC Generator Set sales, service and rentals. We are also a dealer of ASCO, GE/Zenith/Russelectric/Eaton-Cutler Hammer Transfer Switches; PRYCO, Tramont, Simplex Fuel Systems, Avtron, Loadtec, Simplex Load Banks and many other manufacturer/suppliers of Power Generation Systems.

Joseph Joyce . . . .(AF)
Howell MI
(517) 552-3333 Fax (517) 552-5280
Contact: Joseph Joyce, Graduate Student
Business: Student at Eastern Michigan University studying for a Ph.D degree in Technology with a concentration in Engineering Management.

Keystone Pump & Power, LLC . . . . (DD)
Dillsburg PA
(717) 502-8500 Fax (717) 502-8510
Contact: Scott Webb, President
Business: Rental of silenced diesel generators, distribution equipment, air conditioners and pumps. Serving central Pennsylvania.

Markair Power Solutions
a Division of Markair, Inc. . . . . (DD)
Jacksonville FL
(904) 279-2500 Fax (904) 279-0201
Contact: Bob Swesey, Power Systems Business Manager
Business: Markair Power Solutions is the Northeast Florida Dealer/Dirstributor for Lynx Power Systems, Triton Power and Gillette Generators. Our products include gas and diesel power generation products along with manual and automatic switchgear components. Our services include full turnkey installations. We service the residential, commercial and industrial markets.

Matthews Electric Inc. . . . . (DD)
Pembroke MA
(781) 273-3271 Fax (781) 273-3671
Contact: Scott Matthews, President
Business: Sales, installations and service of portable and standby generators for home or small business.

Mel Clark Electric, Inc.
d.b.a. Clark Electric Service . . . . (DD)
Mesquite TX
(972) 226-7275 Fax (972) 226-7278
Contact: Mel Clark, President
Business: Design, install, maintain and repair electrical generating systems.

MGI - Morgan General Mechanical Group, Inc. (DD)
Deerfield Beach FL
(954) 360-9808 Fax (954) 360-9833
Contact: Richard Schulz, Director of Generator Division
Business: MGI sells, installs and maintains generator systems. We are licensed mechanical, general, electrical and pollutant storage. Our technicians are factory trained in troubleshooting and repairing engines, generators, transfer switches and paralleling systems.

Mid America Power Systems . . . . (DD)
Riverside MO
(816) 587-6400 Fax (816) 587-6554
Contact: Tyson Robinett, General Manager
Business: Distributor for Kohler Power Systems with territory of Kansas and Western Missouri. Generators from 8.5 to 2800 kW plus ATS, switchgear, generator enclosures, and other accessories. Service provider on all makes of standby generators. 24/7 service, parts and sales.

National Catastrophe Restoration, Inc. . . . . . . (AD)
Wichita KS
(316) 636-5700 Fax (316) 636-5312
Contact: Dale E. Smith, Vice President of Management
Business: NCRI is an emergency disaster restoration company. We own several diesel generators as well as rent generators as needed.

Power Plus! . . . . (DD)
Orange CA
(888) 970-0007 Fax (800) 784-8318
Contact: David McCorkle, Regional General Manager
Business: Power Plus! supplies world-class quality services nationwide. The company specializes in the sales, service and maintenance of generators, uninterruptible power supply systems, and batteries from distributed generation and co-generation to utility installation and data center services. Power Plus! is committed to maintaining your critical power with innovative, cost-effective solutions.

Power Systems Service and Testing . . . .(AE)
Punta Gorda FL
(941) 380-7385 Fax (941) 625-5729
Contact: Helen Casey, CEO
Business: Service and PMI for Prime and Standby generator systems.

Precision Power, Inc. . . . . (DD)
Kaysville UT
(801) 544-4619 Fax (801) 544-7010
Contact: Eddie McCormack
Business: Generator and switchgear maintenance and repair for all makes and models. Sales and installation for Baldor, SDMO, Norpro, and ASCO.

Professional Engine Systems . . . . (DD)
Canfield OH
(330) 533-6636 Fax (330) 533-5235
Contact: William Hendricks, CEO
Business: Professional Engine Systems Inc. is a sales and service company. We offer a complete rebuild shop, machine shop and radiator shop. We repair generators and controls. We have worked on units up to 2.5 MW. We represent Coleman, Cummins Generator Technology, Generac, Kohler, Marathon, Onan, Spectrum, Voltmaster and Winco.

Propace Ingenieria S.A. . . . . (DD)
San Jose Costa Rica
(506) 253-4341 Fax (506) 283-530
Contact: Esteban Alvarez
Business: We are dealers of Baldor Electric Co (generators, motors and drives), Pramac Industries and SDMO Industries. We assemble automatic transfer switches. We sell Woodward and Basler Electric products.

Puckett Machinery Company . . . . (DD)
Jackson MS
(601) 592-0680 Fax (601) 949-3984
Contact: Rick Apple, General Manager/Engine Division
Business: Caterpillar Dealer

S.O.E. Technologies Inc. . . . . (MF)
St Mathieu-de-Beloei PQCanada
(450) 536-3655 Fax (450) 536-1799
Contact: Daniel Girard, President
Business: Variable speed gensets are now possible with S.O.E. Technologies' continuously variable speed transmission. These transmissions, when installed in a genset, enable a generator's engine to adjust its speed, while maintaining alternator speed at 1500 or 1800 rotations per minute. Thanks to its intelligent electronic controller, the SmartGen system effectively brings the engine to its optimum operating speed according to the power drawn by the generator. The end result is significant fuel savings, fewer emissions and reduced noise.

Travis Brewer . . . .(AF)
Vero Beach FL
(772) 569-8020 Fax (772) 569-0740
Contact: Travis Brewer, Student
Business: Just completed Generac Training School. Currently enrolled in "Contractors Institute" to take masters test. Plan to service and install generators following completion.

Tyco Electronics Power Systems. . . . . (AC)
Sparks MD
(410) 316-6022 Fax (410) 316-6068
Contact: David K. Brant, Field Engineer
Business: We engineer, furnish and install telcom power systems.

VCU Health Systems . . . . (AD)
Richmond VA
(804) 828-6308 Fax (804) 828-2499
Contact: Jason Jones, Maintenance Mechanic
Business: VCU Medical Center is a 760 BCD Hospital. We are the only Level 1 trauma center in central Virginia. The health system consists of over 2.5 million square feet in downtown Richmond and several satellite clinics.

William Lane Enterprises, Inc. . . . . (DD)
Sacramento CA
(916) 344-0288 Fax (916) 344-1209
Contact: William C. Lane, President
Business: Dealer for Kohler Engines & Generators, Kubota Engines & Generators, Guardian Engines & Generators, MQ Power Systems, Multiquip, Harco Exhaust Systems, Cutler-Hammer Transfer Switches.

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